

63157/B

The Library of the
Wellcome Institute for
the History of Medicine

MEDICAL SOCIETY
OF
LONDON
DEPOSIT

Accession Number

Press Mark

SANCTORIUS, S.

Plate wanting



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

https://archive.org/details/b30515828_0002



A. x. 9

Medicina Statica :
OF THE
APHORISMS
OF *Dap*
SANCTORIUS,

Translated into ENGLISH with
large EXPLANATIONS.

Wherein is given

A *Mechanical* Account of the *Animal* Oeco-
nomy, and of the Efficacy of the *Non-Naturals*,
either in bringing about or removing its *Dis-*
orders :

Also with an

INTRODUCTION concerning *Mechanical*
Knowledge, and the *Grounds of Certainty* in *Physick*.

By JOHN QUINCY.

Pondere, Mensurâ, & Numero Deus omnia fecit.

L O N D O N :

Printed for William Newton, in Little
Britain. 1712.

BRITISH MUSEUM
SALE DUPLICATE
I 7 8 7

THE PREFACE.

I Perswade my self that there will be but little need of an Apology for the following Performance, with regard to the Design of it. The Aphorisms of Sanctorius have long been in the best Esteem with all good Judges, who have had the luck to be acquainted with them; and hereby I have endeavoured only to bring them into a larger Acquaintance, both by rendering them in our own Language, and giving such Explanations of some of the most difficult, as may make them easy and intelligible, almost to any Person who has given himself the leisure to reflect at all, upon the Nature of his Constitution, and the Changes it is most apt to undergo by the Influence of external Causes.

This Collection of Aphorisms has not only been a particular Favourite with the Faculty, but also has had a great share in the good Esteem of all other Persons of Understanding; than which there cannot be a more convincing Proof of its worth, Truth never fails of Entertainment when it appears in its natural Dress; as it may generally be observed in any Science whatsoever, that when any thing is advanced and maintained by that natural and peculiar way of thinking, which the Mind is fitted to, it will make its way with every Man of Sense, as well as with those who have been trained up in the Mysteries of that Science.

Knowledge indeed is branched out into several Channels, all of which have by the Subtilty of some Enquirers been pursued into such Intricacies, as makes it very difficult to follow them, and by some have been so much disguised, as to make it even impossible to do it; but when an unprejudiced Person is resolved to venture of himself, upon the strength only of those Capacities his Maker has thought fit to bestow upon him, and pursues his Enquiries with that Simplicity, and upon such Evidences as the Nature of his Subject will admit of, so far as he advances will be attended with Plainness and Conviction, and be as easily made appear to any other Person of tolerable Sense, as to the common Stagers of that Subject.

To this natural and free way of Enquiry it is that Sanctorius has been able to oblige the World with this excellent Collection of Aphorisms. Sometimes indeed he is very apt to lay hold of his Systematical Helps; but it is very remarkable, that he is never more obscure than at such times. He lays down his matters of Fact upon such Evidences as cannot deceive; but when sometimes he goes farther, and gives Reasons, why it is so, he is hardly to be understood. As when he tells us, that Cold strengthens robust Constitutions, but weakens those who are infirm, there is no body can doubt of the truth of it; but when he gives his Reason, that Cold drives the natural Heat to the Center, in the former, and exhales it in the latter, I believe there are very few e'er the wiser.

These Aphorisms have formerly appeared in English under the Title of Rules of Health; but the Translator has retained so many Terms and Latin Phrases, that the Original I should think as easy to an Englishman as the ether, had it not gone off so much, that at this time it is hardly to be met with. Dr. Lister has also given an Edition in Latin, with his Notes upon each Aphorism; but hardly with any other Advantage.

vantage to the World, than making Sanctorius, who was before scarce, more common to be met with. Indeed I cannot make any large Acknowledgment for his Assistances in what I have done, alibough I hardly omitted consulting him upon every Aphorism, for in most I found my Author more intelligible than his Commentator; but in his Notes upon one Place, where he speaks of Specificks working by insensible Perspiration, and with the Bark mentions the Ipecacuanha, as one of the same Tribe, he seems to have fallen into a Mistake as great as it is possible to meet with.

As to the Aphorisms, I have translated them as close as I am able, I mean as to the Author's Sense, and taken as much care as possible therein not to transplant any hard physical Terms; and where that could not be avoided, I have been particularly careful to make them intelligible in the Explanations. The sixth Section of Veneri, I had some Thoughts of leaving out; but for fear some would look upon the Collection maimed thereby, and not be contented without all that Sanctorius himself thought fit to give to the Publick, I have inserted it in its place, and I hope in such Terms as are as chaste and inoffensive, as our Language will bear.

In the whole my Intentions have been only to make these Rules plain and useful to all such as are desirous of having some tolerable Notions of themselves, with relation to the Recovery or Preservation of their Health; in such common Instances I mean, where every thing that turns up in the Course of a Man's whole Life cannot but have some Influence. In acute Diseases indeed, and some obstinate chronick Cases, I do not by any means suppose, that it is possible for a Person to be a Judge for himself, and that there is not then absolutely necessary the Advice of a Physician; but in the common Affairs of Life, I say,

there are a great many things, which if an ordinary Person be well apprised of, may be turned very much to his Benefit or Injury, according as they are managed. And it is with regard to these things, by some called the Non-naturals, that our Author has with an abundance of Labour and Judgment, and upon unerring Guides, composed the following Rules; in the Explanations of which I am far from pretending to any thing of Assistance to those who have been advanced in, and are conversant with Physick; but endeavour only in such a manner to explain those Rules, as to give a Person of any tollerable Understanding, some just Notions of the Nature of his Constitution, and of those means by which it is to be either injured or supported.

We have a common Saying, that a Man at Forty, is either a Fool or a Physician, from whence may thus much be gathered, that a wise Man by observing what Effects every thing which turns up in the Course of his Life has upon his Constitution, may come to a tollerable good Understanding of what will promote or injure his Health. Where then a Man has with the utmost Pains and Fidelity, gone thorough a Course of Observations upon such unerring Guides, as with Certainty to determine the Effects of all these things upon his own Person, a Communication of them to the World with such Lights and Assistances as may render them easy and intelligible to an indifferent Capacity, can, I hope, be no unacceptable Present. It is already out of Dispute that Sanctorius has done the former Part, and by this I have offered my best Endeavours towards the latter.

I am not at all unaware how severe some will be hereupon, in requiring how often they must weigh themselves, and whether they ought to eat and drink by the Ounce; to whom I have only this to say, that Sanctorius by the Ballance has already done enough

to convince any serious Person of the natural Discharges, and their Proportions to one another, the most considerable of which, viz. that by insensible Perspiration was but very little attended to before; from which, and all the Consequences of those Discharges from the least to their greatest Quantities possible, any Person may soon be a Judge of the present State of his Constitution, without going into a Pair of Scales. And for this Reason it is that I have not been nice in searching into the Exactness of the Sanctorian Calculations, the End I propose being answered by knowing that there are such Discharges, how they are to be influenced, and what will be the Consequences of their Disorders. Besides were a Person to make Experiments with the Ballance, it is not at all likely that they should exactly agree with Sanctorius's Accounts, both our Climate and way of Living being so very different from his. He was Professor at Padua in Italy, a Country much hotter than ours, and where their Diet is not so much upon Flesh as with us; all which cannot but very much influence all the Evacuations, but especially that made by the cutaneous Passages.

There is one farther Reason for taking Sanctorius's Account herein, which with some Persons may have considerable weight, altho' with my self I confess it has but little, and that is Authority; for there has not been one of any Note who has called it in Question; but all take it for granted, and draw their Conclusions from it accordingly. Dr. Pircaine has built his *Dissertatio de Curatione Februm*, &c. intirely upon it; some of which I have given an Abstract of under one of the Aphorisms, although I fear he has taken a Postulatum which cannot be granted, about the Substraction of the peccant or morbid Matter equally by any of the Discharges; for nothing is more observable, than

that a Fever has its Crisis frequently by some of the smaller Discharges, the Matter of which could not by any means be drawn off by any of the other, although much larger in Quantity; and thus sometimes it is found that one Stool goes farther towards a removal of the Disease, than an increased cuticular Discharge for some Days together.

In all the Explanations I have studied as much as I could Plainness and Brevity, although indeed in a few Places I have suffered my self to go into a considerable length, which therefore I have inserted as Digressions; but in all I hope there will be found nothing but what may be of use in illustrating the whole, either as it may afford some good Hints in the true Structure and Mechanism of a human Body, or in the Means by which it is most advantageously wrought upon for the Regulation of its Disorders. In that Digression concerning the make of an animal Fibre and its Elasticity, I must confess I have trusted most to my self, and therefore am very timorous about its Reception. If any one thinks fit to advertise me of any Mistake therein, it shall be returned with the best of my Acknowledgment. In that also concerning Agues, and their Cure without the Bark, I fear something too positive in the Expressions; if it so appears to any, I ask their Excuse. The Pains I have been at to make my self Master of that Distemper, and the Success I have frequently met with in its Cure, may perhaps have drawn me into a Confidence, which if I know my self, I think I am no Lover of.

What I have here inserted by way of Introduction, has been a long time the Subject of my Thoughts, and often in my Intentions to make publick; but it falling in so well with the Contents of the following

ing

ing Sheets, I have therefore contracted it as short as I could, on purpose to bind up with them. Mechanical Reasoning is what is much talked of now in Physick, and by some perhaps more than it is well understood; but the greatest number of Professors in Medicine are declared Enemies to it, and make nothing of breaking their Jest upon Angles, Cylinders, Cones, Celerity, Percussion, Resistance, and such like Terms, which they say have no more to do with Physick or a human Body, than a Carpenter has to do in making Venice Treacle, or curing a Fever. It is therefore for the Information of both these, that I have been at the Pains of shewing what Mechanical Reasoning is, and proving that all Physical Certainty depends upon the same Principles.

Thus far having given an Account of what may be expected from the following Sheets, nothing else I think concerns me by way of Preface, besides begging my Reader not e'er the more to slight the Performance, because the Author is not so happy to have any other Distinction than that of an Apothecary; A Name which has the Misfortune to sound but indifferently with those who very much value themselves upon Academical Advantages. The want of such Assistances I must confess my self to have been very sensible of, and shall for ever lament my Unhappiness therein; but so far as I have in this Work invaded the Province of the Faculty, I cannot conceive how it can be looked upon to lye out of the reach of any common Capacity, assisted only with such Helps as an inquisitive Mind and frequent Opportunities of Observation are able to supply. I hope it needless to insist upon the several Advantages any Person in such a City as this is cannot but have towards their Improvements herein; It must surely then be very hard that an Apothecary only, whose proper Business leads him a great way into these Affairs,

Affairs, must be tied down to perpetual Ignorance. What Improvements I have made of them for my self, I have ventured to the Testimony of the following Pages; and hope therefore that all the Mistakes that may be found in them, will the more readily be overlooked, because I have had no better.

THE

THE INTRODUCTION.

*Of Mechanical Knowledge, and the Grounds of
Certainty in Physick.*

Phyfical Writers of late have with a great deal of Industry and Success introduced *Geometry* into their Studies, and endeavoured to account for all that concerns the Animal Oeconomy upon Mechanical Principles: and this they seem to have done, not only as the best means to get clear of all suppositious and delufory Systems, but also as to them it has appeared to be the only way by which we are fitted by our Maker to arrive at any fatisfactory Knowledge in the Works of Nature. But becaufe fome herein have gone fo far, as to give even occafion of Offence to feveral who happen not to have their Heads well turned this way, and who, out of fome Prepoffeffions in Favour of occult Qualities, Smpathies and Antipathies, and the like, cannot bear without Indignation and Scorn to fee thofe great Myfteries of Phyfick, and that excellent Frame which is its Subject, that beautiful Epitome of the Creation, marked out like a Spot of Earth or a Piece of Timber, with Rule and Compaffes: For this Reason, I fay, it is that by this Introduction is intended an Enquiry into the means by which we arrive at any Certainty in Phyfick, and to fhew that it is not to be done without fuch Helps; for I cannot but be perfwaded that the fmall Progreff which has been made in Phyfical Knowledge for a long fpace
of

of Time, is chiefly owing to the want of a due Attention to those Powers and Capacities of the Mind, by which only it is enabled to pursue such Enquiries; otherwise certainly so many, who pretend also to be no mean Proficients therein, would not take so much Distaste at all Pretences of this kind, as it is common to meet with; and affirm oftentimes that the Best talk but learnedly of what they know nothing of, and that the whole is meer guess-work. It is for the sake of such, that I am willing to be at the Pains to convince them that the Fault is not in the Science, by its not affording sufficient Evidences to build any Certainty upon, but in themselves, in their Ignorance in the means by which that Certainty is to be obtained.

And in this I have hopes in a great measure of succeeding, by demonstrating that those Rules and Laws of Motion, which we are furnished with from *Mechanicks*, are the only Guides we can have in discovering the Natures and Properties of all material Substances whatsoever, and that by these Assistances they are knowable, and that too with the greatest Certainty. And this I much the rather chuse to do in this Place because our Author, although he composed these *Aphorisms* at a time when this way of Reasoning was but very little made use of in Physick, and seems to have had but very little Regard for it himself; yet the means of Information he hath herein used have so steddily guided him throughout the whole, that there is but very little advanced, but what is very conformable and applicable thereunto, and what may be demonstrated with the utmost Clearness and Certainty. And this Success he hath herein met with is plainly owing to his Disregard of all Prepossessions, following Nature in her Simplicity, and grounding his Conclusions only upon sensible Evidences; which in this Essay I shall endeavour to
prove

prove are our only means of Information in these Studies, and that they only furnish us with all our Materials of Knowledge in Physick. If therefore in the Prosecution of this Matter the Reader shall think, that some Thoughts are drawn out into too great a length, I hope it may be excused, if they are found but at all conducive to the Illustration of an Affair of this Importance.

When a Person sets out upon any Enquiry, nothing can be of greater Concern, than to be first well acquainted with the Powers and Capacities of his own Mind, and the means by which only the Matter he has in pursuit is attainable. For as the Capacities of the Mind are very extensive, so every one but indifferently conversant with himself, will also by Experience find that there is a great deal of difference in the means by which it is fitted to receive all its Materials of Knowledge; and that the same ways by which it comes by its Notices of one thing, and by which it is carried on to all the several Degrees of Assent, is vastly different from the means by which it receives its Informations about some others. If then this necessary Result of that peculiar manner by which the Author of our Beings has thought meet to fit us for Knowledge, be not well enquired into, it must needs be a great Chance if ever such a Person arrives at any considerable share of it, because he cannot but frequently fall into a use of the wrong means, whereby he will be either so perpetually bewildred with Obscurity, as at last perhaps to throw off all farther Enquiry, or fall into some imaginary delusory Schemes, which have no Foundation in Nature, and which will much sooner make him an Enthusiast than a Philosopher. And this is as manifest to any one who will give himself the leisure and trouble of Reflexion, as that our Organs of Sense are so differently framed that one cannot perform the Office
of

of another ; so that to seek after Knowledge upon different Subjects, by the same means, is not less absurd than to suppose, because my Nose informs me that a Rose is sweet, that it can without the help of my Sight or Taste teach me that it is also red and bitter.

But to set this still in a more clear Light I shall shew by a few Propositions, the different ways the Mind must necessarily take to be instructed therein, and convinced of their Certainty. As for Instance,

1. That *Julius Caesar* was stabbed by *Brutus*, and other Conspirators, in the Capital at *Rome*, above Seventeen hundred Years ago.
2. That there is an eternal immutable difference between Good and Evil, as that it eternally will be looked upon by reasonable Beings, that Gratitude to a Benefactor is just and commendable, but Ingratitude wicked and hateful.
3. That the three Angles of any Triangle are equal to two right ones.

In the first Proposition as soon as a Person is told it, he considers the Capacities and Abilities of the Person that is his immediate Informer, and the means by which he came by it himself: When that is done, then comes to be considered the Credit of his Authors with other unprejudiced Persons; he takes also into consideration their Numbers, the Agreement of their Stories, the Improbability of the present and succeeding Ages to that Action, being imposed upon, and the Folly of endeavouring to do it, was it not Truth; until at last he comes as fully to be convinced of the Reality of it, as of any thing done but Yesterday, in his own Country.

In the second the Mind goes quite another way to work; for what convinced him of the former, he finds

finds no Assistance from here, or is it of any manner of weight with him, what the Persons are that affirm it, but he is altogether determined by the Notions and Ideas he has in his Mind of Good and Evil, Gratitude and Ingratitude; which he at length finds to be such necessary Opposites to one another, that there must eternally be a difference between them; and insomuch that it is not in the Power of any Being whatsoever to change them, the Distinction it self being supported by the Impossibility of an Omnipotent perfect Being's doing any thing but what is good and agreeable to his own Nature; but to confound right and wrong, Good and Evil, so as to make what is absolutely Good to be Evil, and *è contra*, is destroying the necessary Idea every reasonable Creature has of a Deity, subverting the Foundation of all Obligations, and therefore can it never be done.

But when he comes to the third Proposition, he again finds a Necessity of altering his Measures, although as in the former, the Credit of the Person pronouncing it signifies not one jot towards obtaining his Assent, The first thing then he does is to get clear Ideas of the Terms of the Proposition, in which he finds himself obliged to his Senses, and that in the whole Affair he proceeds by their Evidences only: To this purpose therefore he describes Angles to be view'd by the Eye, and learns how to measure and compare them with one another, until at last by the Evidences of his Senses only he is beyond all doubt convinced that the three Angles of any Triangle whatsoever are equal to two right Angles. And in any Proposition of this Nature, although after some time a Person comes to be so conversant with the Terms used therein, that he may frequently be able to apprehend the Reason and Truth of it without picturing of it to his Sight by a Diagram; yet the Mind all the way imagines it, and keep

keeps the Picture of the thing spoke of close in view; for no longer than he does so can he discern his Evidences, and consequently without it can never make any certain Conclusion.

But because by this last Instance I shall endeavour chiefly to illustrate what is meant by Mechanical Knowledge or Physical Certainty, I would herein be as particular and plain as possible, and therefore shall go thorough the several Steps whereby the Mind comes at the Truth of this Proposition; which although it may be done various ways, yet they all agree in this that they keep always close to the same Evidences.

1. To know clearly what is meant by a right Angle, let the Perpendicular F. G. be let fall upon the right Line X. Z. and it makes two right Angles M. N.
2. If then the Perpendicular F. G. be drawn thorough X. Z. as in Fig. 2. there will be made four right Angles, M. N. O. P.
3. Farther, if the Perpendicular F. G. be changed into a Line which cuts the other X. Z. obliquely, as in Fig. 3. there will four Angles be made thereby; which although not equal to one another, yet their Sum, that is, taken altogether, will be equal to four right Angles. For as much as the Angles O. N. are lessened, the other opposite Angles M. P. will be enlarged, and therefore their Sum will be as before.
4. If again, as in Fig. 4. there be another Line S. T. drawn Parallel to X. Z. then there will four more Angles 1. 2. 3. 4. be made in all respects equal to the former, M. N. O. P. for M is equal to 1. N is equal to 2. O is equal to 3. and P is equal to 4. as may be demonstrated at large.

Thus

Thus far then being known of Lines, and the Angles they form by these Positions one to another; let a Triangle be formed as in Fig. 5. and the Side A. B. be extended as far as E. it is plain by Step 1. 2. 3. that the internal Angle A. and the external Angle D. taken together are equal to two right ones: If therefore it can be proved that the Angles B. and C. amount to just the same as the Angle D. then the Proposition will be demonstrated. To this purpose therefore the best way is to try to divide D. into two Angles in some such manner, if possible, as to be commensurable separately to B. and C. and how this may be done appears from Step 4th, by drawing a Line through the Vertex, as X. Z. which shall be Parallel to the Base B. C. as in Fig. 6. and will cut the external Angle into K. and L. Now by the same Reason that N is equal to 2. Fig. 4. or that there is an exact Equality between the correspondent Angles made by each Parallel; for the very same Reason, I say, is K equal to B. in Fig. 6. and E equal to C. If then the Sum of A. E. K. is equal to two right Angles, as before proved, and B added to K. is equal to K added to E. then the Sum of A. B. C. will be equal to A. E. K. that is equal to two right Angles, which was to be demonstrated.

And thus by these three Instances, may it easily be perceived how differently the Mind is engaged in its Enquiries upon different Subjects; for although all these admit of Certainty, yet it is come at by very different means; with very good Reason therefore they have by some been distinguished into Historical Certainty, Moral Certainty, and Demonstration. The first depends upon the Credit and Abilities of the Reporter: The second, upon the necessary Ideas of a good and perfect Being; and the third upon the Testimony of our Senses, which only is our Guide in all Propositions relating to the Natures

and Operations of material Substances, from the most simple and uncompounded to the most intricate and abstracted whatsoever. For whatsoever of this Nature is laid down for a Truth, let the Authority of the Person be never so great who pronounces it, even so far as to make me certain that he would not affirm any thing but what he knew to be true; and likewise would not by any means lead me into an Error; yet until I go some such way to work as hath been taken in this last Instance, and come to see the Reason and Necessity of its being so my self from the same Evidences, I cannot be said to know it, or shall I ever be able to make use of it to any advantage, were it applicable to never so many good Purposes.

This last way of Instruction likewise as it depends upon Demonstration, that is upon such Evidences as cannot deceive, so there are a great many ways frequently of proving the same thing, and all with equal Certainty, because they all in the same manner keep close in view the several Steps by which it is made appear; as may be shewn in the Proposition above-mentioned, which will admit of several ways of Demonstration. That which I have taken here indeed is neither so strictly demonstrative as Mathematicians require in all its Steps, or so concise as might be; because I have contrived it only in such a manner as to prove to a Person that never before heard of it, that the Proposition is certainly true, and to illustrate that particular Procedure which the Mind necessarily takes in all its Enquiries of the like Nature.

Thus far I believe is attended with no manner of Difficulty, although perhaps some are by this time ready to ask, what has all this to do with Physick? My Business therefore next shall be to shew that all our Knowledge of the Operations and Effects of Phys-

fical

fical Agents, that is, of all the Alterations and Changes that are brought about in the visible World by the immediate Agency of Physical Causes, to shew, I say, that all our Knowledge of these Matters, is taken in by the same Means, and depends altogether upon the same Evidences. After which I shall endeavour to apply it to Medicine, and prove that all we can know of a Human Body, both with regard to the Frame and Mechanism of its Parts, and to the rectifying of its Disorders by Medicine, to be likewise upon the same Principles.

The first of these I expect will be answered, when it appears that all the essential Properties of Matter, (such Properties I mean as are inseparable from it under what particular Mode or Form soever it exists) are no other than what our Senses very clearly and distinctly discover to us, and that we have no other way of knowing them but by their Information. And to this purpose it will be very convenient to go over the first Notices we have herein by these Assistances; that is, those Properties of Matter or Body, which from the Testimony of our Senses are demonstrative and self-evident, and which cannot but excite in every one that attends to them the same Ideas; and hereby we come by very clear and distinct Ideas of Solidity, Extension, and Figure.

In every Body or Parcel of Matter, under whatsoever Mode of Existence, we immediately find in it a Power of Resistance; so as not to admit any other Body in its Place, unless by any external Force it self be first removed out of it. This we find necessarily and universally to hold good in all Bodies, both fluid and solid, For although the constituent Parts may be fitted never so much to form a yielding fluxile Body; yet when the Mind considers it only as it is Matter, or something corporeal, and pursues it to its smallest constituent Parts, it will

b 2

appear

appear still with the same Necessity to be endued with this Property, as much as if it was the most firm and consistent Composition of Matter whatsoever. Thus the Air inclosed in a Bladder, as much resists the Sides of it being brought to a close Contact, by any external Pressure, as this Book between my Hands prevents their touching one another. And this is the very same which some please to call Impenitrability, which is but as much as to say, that every Body or Parcel of Matter is so solid, as not by any means whatsoever to allow of another Bodies being thrust into, and possessing the same Place, which that takes up before it is first thrust out, and thereby makes room for the others coming into it.

Extension also appears with as much Clearness and Conviction to be another Property; although not as Solidity, which can be applicable to nothing else, because, as will farther appear a little below, it is easy to conceive of an absolutely extended Space, that is empty of all Body, or which is the same thing, a commensurable Distance between two Bodies, that are remote from each other, and yet have no other Body between them: Although indeed the *Cartesians* have puzzled themselves in this Matter, by making the Essence of Body, as they call it, to consist in its being extended, and thereby conclude falsely, that *omne Extensum est Corporeum*. Every Body is circumscribed by some Bounds, otherwise it would be infinite, which is absurd to suppose; these Bounds then are called Superficies or Surfaces, and nothing can be more plain than that there is a certain commensurable Distance between such Superficies, greater or lesser in Proportion to the Bulk of each Body: These Superficies moreover not being infinite, their Bounds are called Lines, which likewise are distant from one another: These Lines also must have their Bounds, and they are called Points, between

between which likewise there must with equal Necessity be some Interval. Now from all these different Distances taken together, we become furnished with a clear Apprehension of what is usually called the Trine-Dimension, that is, *Length*, *Breadth*, and *Thickness*, which every Body or Parcel of Matter cannot but be endued with, although broke into the most conceivable Smalness. The Distance between its opposite, or upper and lower Superficies, is called its *Depth* or *Thickness*; between the opposite Lines terminating those Superficies, *Breadth*; and between the opposite Points bounding those Lines, its *Length*.

With the same Evidence likewise we become furnished with a clear and distinct Idea of Figure, and discern the Impossibility that any Mass of Matter, how large or small soever, should exist without it. For if a Body be broke and divided into its *Minima naturalia*, or as far as Thought it self can conceive it possible to be done, yet there still will appear the same Reason and Necessity, that every the most minute Particle must still exist under some determinate Figure or other, as before, and as well as the largest whatsoever. For Division, although into the most insensible Parts, can never take away its being figured, and does nothing more, than make two or three distinct separate Bodies or Masses of Matter of that which was but one before; all which distinct Masses looked upon as so many distinct Bodies, after their Division, become severally existing under some certain Figures, as well as before their Separation, when they existed in one entire Body.

Here farther it will be proper to take notice of something, concerning which the Mind takes in as clear an Idea as of any thing whatsoever; which although it cannot properly be accounted an Affection or Property of Body, yet the Idea of Body does so

readily and naturally inculcate it, that it is impossible to reason justly about the Properties and Affections of material Substances without having it always in view : and that is what commonly is called *Space*, and is understood to be destitute and empty of all Matter ; and to this the Property of Extension is as justly to be attributed as to Body. It is easy to conceive of two Bodies at a Distance to be moved towards one another, until they come to Touch, without displacing any other solid Body ; as likewise to be again separated to the same Distance from each other as before, without supposing any other Bodies Interposition ; whereby we come at a clear Idea of Space void of all material Substance, when we have a full Conception in our Minds of that intermediate Void between the two separated Bodies. There is also no manner of Difficulty of conceiving of the Motion of any one simple Body alone, without the Necessity of another's entering into its Place ; all others at that time being supposed to be at rest ; by which means the Place the moving Body did take up, before its being put into Motion, must be deserted ; and while others are at rest remain a Void, and into which any other Body not exceeding its Dimensions, may enter without any manner of Protrusion or Resistance.

However any rational Creature came so far to impose upon himself as to entertain a Disbelief hereof, I cannot easily imagine. But it is certain that such have been the Prejudices which some Persons have taken up from an unaccountable Bigotry to Systematical Learning, and to those Schemes particularly which have had the Maidenhead of their Understandings, as to have raised Controversies hereupon. Some with their Heads full of the Tricks of a *subtile Matter*, and others out of a religious Dread of charging such an odious thing as a *Vacuum* upon Nature, have

have not made any Difficulty sometimes of arguing themselves out of their Senses. For such as have not quite outgone all Regard to their Testimony, cannot but fully be convinced, as well as from Reason *a Priori*, by an abundance of convincing Experiments (for this Purpose contrived) of the Truth hereof: Although in this Idea there may indeed be made some Distinction from those before taken notice of, *viz.* that it is rather from a privative than a positive Cause: But (as the excellent Mr. Locke hath already made it fully appear) nothing is more certain, than that we have a great many of our positive Ideas or Perceptions even very clear and distinct from privative Causes; as of *Rest*, *Silence*, a *Shadow*, and many others. For a full Account of the Sophistical Reasonings, by which some have endeavoured to impose both upon themselves and others herein, with a full Refutation of them, the Reader may consult *Borelli de Motibus naturalibus a Gravitate Pendentibus*, Prop. 247 — 270. and Mr. John Keil's *Second Lecture*, in his *Introductio ad Veram Physicam*.

There is another Idea likewise, which we obtain from our Senses of the Properties of Matter, and which appears with as much Certainty, and of which we are able to form as clear and distinct Notions as of any of those before mentioned, and that is *Motion*; although indeed it is not in the same Respect necessary and essential to it, because we can have a clear *Idea* of Matter without it. By Motion, I mean a Power of being moved by any external Cause from one Place to another. About this likewise have been raised a great many Sophistical Cavils, by such who pretend to too much Cunning to be imposed upon by such deceitful Informers as their Senses; but these also may be seen very handsomly exposed by Mr. Keil in the above-mentioned Place.

With equal Certainty also we find an absolute Incapacity in Matter to put it self into Motion, or any ways to alter the present State of its Existence, unless by the Force of some external Cause. For although we find every Body susceptible of Motion from the Impulses of external Agents, yet there is no manner of Consequence from the Idea of Body, to a Power of putting it self into Motion, but quite the contrary. Let any one consider the next Stone he meets with, firmly compacted and at rest, and see if he possibly can conceive in it a Power of ever being otherwise, and not be forced to conclude that it must necessarily for ever remain so, unless put out of that State by the means of some external Power.

But yet notwithstanding the Impossibility of conceiving a Power of Self-motion to be inherent in Matter, according to the most simple and most natural Idea we can have of it; yet we are evidently convinced by our Senses, that its Omnipotent Creator hath endued it with a Power or Tendency of Motion towards some determinate Point or Center, which Power we commonly call Gravity. Although likewise as to this Property there does not appear any necessary Consequence from the Idea of Body that it should be endued with it; yet we find it to hold good in all Bodies or Parcels of Matter whatsoever. If any Body, suspended in a Fluid specifically lighter than it self, be let go, it will tend towards some determinate Point; or, as we commonly say, fall until it rests against some other hard consistent Body, which hinders its farther Progress. And this Property or Affection of Matter is the same also as is meant by the Term Attraction; the Laws and Determinations of which, as will presently farther appear, are the only Guides we can have in finding out the Powers of all Physical Agents. From Motion also we
come

come by several other Ideas, as of Time, Duration, Succession, Place and Number, which in Physical Disquisitions cannot but frequently be made use of.

The last general Property of Matter which I shall take notice of, (for the Knowledge of which also we are beholden altogether to the Information of our Senses) is its wonderful Divisibility, or a Power of being broke and divided into Parts of the most conceivable Smalness. There are a great many Phænomena in Nature not any ways to be accounted for by a Person that is not very well apprized of this Property. As for those Geometrical Demonstrations which are brought to prove its infinite Divisibility, I cannot understand them to be of any farther Use than to shew the Penetration of their Inventors; because there are such a multitude of Instances, whereby this Property sufficiently appears to those as are not at all acquainted with such Methods of Reasoning. As in the Ductility of Gold; when a Piece of Silver is covered with it, although as thin as possible, and that Silver drawn out into the greatest possible Length, exceeding a great many thousand Times its former, it will notwithstanding still appear in all its Parts to be covered over as at first with Gold; which Parts farther being cut as small as possible to be viewed by the naked Eye, as every Part has some Gold upon it, so it cannot but convince the Beholder, to what a prodigious Smalness of Parts it may be divided. Monsieur Robault in his *Physicks*, Cap. 9. Part 1. has computed with a great deal of Exactness, into how many Parts any given Quantity may be divided; as also hath Mr. Edm. Halley, in the *Philosoph Transact.* N°. 194. done the same. This wonderful Divisibility of Matter also very much appears in the *Effluvia* of odoriferous Bodies; so small a Quantity as a Grain-weight of some of which, will emit such Plenty of *Effluvia*, and for a considerable

table time, with such little waste of Substance, as would be incredible, were it not so evidently confirmed by the Testimony of our Senses. For it is on all Hands agreed, that what strikes the Senses from an odoriferous Body, is actually corporeal, and proceeds from that Body ; and whereas there are a great many odorous Substances, which in very small Quantities will remarkably affect the Sense of Smelling at great Distances, it is necessary that thorough all that Space in which it is so perceivable, there should actually be diffused a great Plenty of Particles exhaling from that Body ; and insomuch that wheresoever a Person is within that Compass, those Organs which are suited to receive such Impressions, shall be struck upon and affected by those Particles.

Thus we come by those general Notices of Body, which are the Materials of all Physical Knowledge, by the Instruction only of our Senses ; and of such other Matters as the Ideas of Bodies, under their present Appearances and manners of Existence in the visible World, do necessarily inculcate to us upon the same Grounds ; as from the Consideration of Motion, we are brought to that of a *Vacuum*, or a Space void of Matter. From the same uncontestable Evidences also are we made acquainted with its Divisibility and Power of Gravitation, or Attraction, which is but the same ; and therefore are they equally as manifest as any of those other Properties of Matter, of which it cannot be divested without loosing also its own Existence.

The Essential Properties of Matter likewise may upon this Account be differently considered, that some of them are always the same in all Respects in all the Compositions of Matter, but that others will admit of different Modifications. Thus Solidity and Inactivity, or an Incapacity of Self-motion, are in all Respects the same in all Parcels of Matter ; every

Particle

Particle of any Fluid is in it self as solid as the Particles of the most hard and consistent Body whatsoever, nor can any one Body be said to be solid one way and another Body another way ; for the Cause that makes one so, makes also the other so, and exactly in the same manner and degree. Howsoever likewise any particular Parcel of Matter is managed, and although it be broke and subtilized into Parts of the most conceivable Smalness, yet it even then is as far from having in it self a Power of Self-motion, as it had in a much grosser Form. But as to Figure and Extension, or Magnitude, although there is no Body whatsoever, but must necessarily be endewed with them, and exist under some Figure or other, and Degree of Extension, yet they may be very different in one Body from what they are in another ; and from the continual Occursions and Attractions of moving Bodies, we find them continually subject to Changes ; the Points of some being struck off, whereby they lose both their former Figure and Bulk, and others by their mutual Gravitations or Attractions towards one another cohere and form Corpuscles of new Shapes and Dimensions.

Thus farther as Figure and Magnitude are the only essential Properties which can be diversify'd, so from their different Modifications with Motion results all that Variety of Forms and Appearances under which the material World does exist : For if the other essential Properties will admit of no Variation, then it necessarily follows that what Adventitious or accidental Qualities soever Bodies appear to be endewed with, it is owing altogether to the peculiar Dispositions of the two former, as they happen to be wrought upon and modified by any external Cause, and as thereby they are empower'd by their peculiar Figures, Bulks, and Motions, either to affect us, or any other Bodies in a particular manner.

And as no Body whatsoever has in it self a Power of Self-motion, and as all the Changes and different Forms are not to be effected without Motion, so such Motion, from whatsoever external Cause it arises, will always be likewise under the Influences of the Figures and Bulks of the moving Bodies, as well as under the Directions of the impelling Force. To know therefore what will be the Consequences of the Impulse of one Body upon another with Relation to the changing the present Form of its Existence, and giving it new Qualities, it is first necessary to find out the Laws of their Motions, and learn by what Properties in the moving Body those Laws are determinable.

But to give an Instance how these are influenced by the Figures only of the moving Body, let us imagine two or more Bodies of the same Magnitudes and Gravities, but unequal in their Figures; as suppose one a Globe, another a Cube, and a third in the Form of an Hemisphere, to set out together from the same Place with equal Velocities, thorough the same *Medium*, and in Directions horizontal and parallel to one another. Both their Velocities and Directions would quickly be determined very different from what they were at their first setting out, by the different Opposition they would meet with from the *Medium*; their Velocities would soon become unequal, by the different Capacities of their Figures to divide it. For to make room for their Passage, suppose the *Medium* to be Air, but under no Flux or Tendency towards any particular Point, it must first recede or be moved out of the way by the Pressure of the moving Body; according to the difference of which Pressure, the moving Body becomes more or less retarded in every Point of the *Medium* it passes thorough, so that their Velocity will then be as the breadth of their foremost Surfaces, or as the length

of those Diameters that are perpendicular to the Lines of their Directions; wherefore because the Hemisphere contains (by Supposition) as much Matter as the Sphere, and consequently has some ways a greater Breadth or a larger Diameter, and other ways less than the Sphere, when it happens to move with its longest Diameter perpendicular to its Direction, it cannot possibly move with the same Velocity as that of the Sphere, notwithstanding they are impelled by equal Powers, because it strikes against more Points of the *Medium* at the same time, and thereby undergoes the greatest Retardation; and if it happens to move with its shortest Diameter perpendicular to its Direction, then it would gain Ground of the Sphere, by its not meeting with so much Opposition in its Progress. And so according to every ones Figures, and Positions to their Directions, would their Velocities be more or less retarded.

In like manner will their Directions soon be varied, by the Difference of their Figures, for the Sphere, (supposing the Resistance of the *Medium* to be uniform on all sides, and likewise that the Sphere it self had no other Tendency but that way where the impelling Force had directed it) would fly in a right Line until its motive Powers were wholly spent; but since the Air thorough which it is supposed to move continually weighs upon it and presses it downward, and likewise that it hath in it self an Inclination different to the Line of its Direction, *viz.* towards the Earth, by the Influence and Concurrence of these two Powers it must necessarily describe a Curve Line, continually tending nearer the Earth as its motive Powers decrease upon the Resistance of the *Medium*. But neither of the Bodies in the Figures of a Cube or a Hemisphere, will be able to describe such a Line, because the Inequality of
their

their Surfaces will expose them to an unequal Pressure or Resistance. For by the foremost Point of the moving Body must the *Medium* be divided, which recedes, upon its Impulse, laterally; but if from that foremost Point of the moving Body, its Surface stretches out farther on one side than on another, or comes nearer to a right Angle with the Line of Direction, than the other, that is, than the opposite side does; then it meets with a greater Stroke on that side than on the other, and consequently is deflected from its first Direction, that way where it meets with the least Resistance, and thereby receives a new Direction, which likewise will again be soon changed by the same Causes.

And thus we find a vast Diversity in the Circumstances of Motion, meerly from a Diversity of the Figures of moving Bodies; but when we come to consider what the concurrent Varieties both of Figures and Magnitudes can perform, the Determinations and Effects of their Motions will be found almost infinitely various, and surprize us to think what a multiplicity of Productions or Effects are deducible from so few Principles. For whatsoever Vertues or Affections we find in any Bodies, after what manner soever they affect our Senses, or seem to operate upon one another, it must be by the different Modifications of the Figures, Bulks, and Motions of their component Parts. And without an Impulse, either by mediate or immediate Contact, sufficient to excite a Motion or some Change from their former Positions, it is very manifest that two Bodies cannot have any Effect or Influence upon one another; but this Motion we likewise find is influenced by the Figures and Magnitudes of the moving Bodies; and therefore must it necessarily follow that whatever Qualities or Vertues any Bodies are endew'd with, or whatsoever Appearances they exhibit, they must originally

ginally flow from these two primary and essential Properties of Matter, Figure and Magnitude; and consequently whatsoever Notions we form in our Minds concerning the Principles of mixed Bodies, whether we suppose them altogether simple and uncompounded Particles of Matter, or little Clusters generated from the Coalitions of those primary Particles; yet as to their Capacities and Affections in the Compositions of Bodies it is all one, seeing they cannot be endew'd with any other than what they derive from their proper Magnitudes and Figures.

From this it is a very natural Consequence, that to know the Properties, Vertues, or Qualities of any Body or Parcel of Matter whatsoever, that is, to know what that Body is able to do upon another, or how far to change it, it is absolutely necessary first to be acquainted with the Bulks, Figures, and Motions of its several Parts; for when this is known, then the Consequences of their Impulses upon the other will also be with Ease determined. Thus as I am certain that the constituent Parts of a fluid Body must be so far round, and admit of such small Contacts, as easily to roll upon one another, without any Resistance of Angles or Cohesion of Parts; so I am certain that if any foreign Matter, or such Parts of any other Body, as will both by their Fitness to cohere with the Parts of the Fluid, join with them, and by their Angles prevent their Flux one over another; If any such Matter, I say, hath Force enough given it to divide the Parts of the Fluid, and mix with it, it cannot but immediately take away its Fluidity, and render it hard and consistent. And thus it is when there is such a set of Particles supplied to the Air, with Weight and Force enough to divide and mix with the Particles of Water, that they immediately fix it, and from a yielding flowing Body, change it into a brittle consistent one.

Thus

Thus also it is manifest, that when we see any Metal fluxed by Fire, it is brought about by mixing a number of Particles with it, which by their wonderful Smalness and Rapidity of Motion, are able to insinuate themselves between all the Parts of the Metal, and divide their Contacts, whereby they will slide upon and roll over one another, as it is common to the constituent Parts of any Fluid. But whereas these Parts which were supplied from the Fire, are so much lighter than the Parts of the Metal, they will whenever they get at the Surface fly off; and therefore as soon as their Supply is removed, the metalick Particles will again join, and cohere as before.

Farther likewise when we see a Thread or Chord shorten'd by thrusting it full of Spikes or Pins, and afterwards that wetting it with Water only will do the same, it is without all Dispute that the constituent Parts of the Water act also as so many little Wedges, which by their Number make up what is wanting in Bulk, and by their prodigious Smalness require but a very weak Motion to carry them in between the component *Fibrillæ*, and distract them, whereby they become equivalent to any other given Force, and are sufficient thereby to raise as great a weight, that shall be tied to hinder the Chords Contraction.

And thus by a multitude of Instances may it be demonstrated that in all our Knowledge of material Substances, we are carried on by the same Steps, and that we are obliged all the way to picture them in our Minds, and keep in view the Figures, Magnitudes, and Conditions of Motion of whatsoever is under our present Enquiry; and to find out their Vertues and Properties, with regard to their Operations either upon our Senses or upon one another, just in the same manner as we came to trace out the

Truth

Truth of the above-mentioned Proposition, that *The three Angles of any Triangle are equal to two right ones*. And to this purpose in those greater Bodies or Collections of Matter, which Artificers contrive and put together for the making any particular Machine; in order to know the Powers of that Machine, and what it will do, it is absolutely necessary to learn both the exact Shapes of the several Parts, and also to understand the Reasons of their Positions to one another, and the Powers by which upon that Account they have of Motion, and of answering all the Purposes of the Contriver.

Now from these Considerations, and the Assistances we have from our Senses, in measuring and computing the Figures, Magnitudes, and Celerities of the several Instruments, it is, that we come by a set of Rules or Laws whereby always to determine all the Circumstances and Conditions of Motion in any Body or Machine whatsoever; so that if any of the Conditions are known, the other also may be found out; as for Instance, the Bulks, that is, the Quantities of Matter, (supposing their Figures the same) of two moving Bodies being known, and their Celerities, their *Momenta* or Percussions may also be known by considering them as Rectangles under their Bulks and Celerities; also if their Bulks are the same, their *Momenta* will be as their Velocities; and if their Velocities are equal, their *Momenta* will be as their Bulks; and likewise if their Percussions are as their Magnitudes, their Velocities must be equal. And thus from any of the known Conditions of Motion, with the utmost Certainty may the other also, before unknown, be demonstrated; the Rules by which we are enabled to do this being founded upon the same Evidences as our Knowledge even of the Existence of the Instruments, when we see and handle them.

Wherefore, (as it hath already been observed) if Matter howsoever modified, cannot move it self, and there cannot be any Change brought about in it without Motion, and if that Motion is under the Influences of these Causes, and determinable only by such Rules; then it is most certain, that whensoever our Enquiries are engaged about the Powers and Vertues of the most minute and unheeded Compositions of Matter whatsoever, that, I say, we are to be guided only by those very Rules, by which we are enabled to determine the Powers of the most bulky and conspicuous Bodies. And it is a close Application and Adherence to these Guides, in Physical Searches, that is called *Mechanical Reasoning*; and so far, as any of the Conditions of Motion can be discovered, sufficient to demonstrate by those Laws, those that are unknown, is justly called *Mechanical Knowledge*. And thus as the Logick of the Schools furnishes us with Rules, whereby to distinguish those Ideas we take in by Reflection, and are meerly speculative of incorporeal Beings; and teaches us, by a careful Attention to their Agreement or Disagreement, to advance and prove several Propositions concerning them; so are those Laws of Motion which we are supplied with from *Mechanicks* (if I may so term it) a *material Logick*, by which, according to our peculiar Make and the very Necessity of our Beings, we are carried on from our first Notices of Matter, to the utmost Extent of our Knowledge about corporeal Things; that is, as our first Notices of Bodies are from our seeing and feeling them, so those Laws by which we are conducted in the most distant Searches about them, are all the way supported by the Evidences of those Senses. And upon this Account it is, that Physical Knowledge is assisted by picturing and drawing to view the Figures and Dimensions of those Instruments or Agents that are under

der Consideration, whereby their Powers and Efficiencies are the better determined and demonstrated: And this it is that sometimes occasions a Necessity, or at least makes very useful those Diagrams in Physical Books, which are apt to move either the Contempt or Laughter of those conceited People, who merely for want of Acquaintance with themselves, and the Powers and Capacities of their own Mind, are, just as their Blood happens to circulate, either *Enthusiasts* or *Scepticks*.

Having thus endeavoured to inculcate a true Notion of *Mechanical* Knowledge, and to prove it the only way by which we can know any thing of the Nature and Properties of Bodies; it might be of Service also to expose the common Prepossessions about *substantial Forms*, *Privations*, *occult Qualities*, *Sympathies*, *Antipathies*, *Nature's Abhorrence of a Vacuum*, and such like delusory and imaginary Existences, which have no manner of Foundation in Nature, and are of no other Use than to puzzle an Enquirer into Truth, and to shew the Subtilty and Cunning of their Inventors. But this would be of too great a Length; I shall therefore take no farther notice than of what may be understood by *Form*, and by *Quality*, these Terms being most made use of.

Every Body exists under some Form or other; but then that Form is nothing else than a distinguishing Modification of the common Matter of which that Body is composed, so as clearly to give it a peculiar manner of Existence; that is, it is an Aggregate or Convention of as many particular Qualities, as serve to denominate a Body of such a Nature, and to give it such a Name, and to distinguish it from other Bodies. As the Qualities of the greatest *specifick Weight*, *Ductility*, *Dissolvibility in Aqua Regis*, and not in *Aqua Fortis*, and *Yellowness* of Colour, make up the Form of that Metal which is called Gold.

So that it is not any kind of substantial Soul, or Substance distinct from Matter, but only such a proper and agreeable Convention of Accidents, as by common Consent are reputed sufficient to make any Portion of universal Matter belong to this or that determinate *Genus* or *Species* of natural Bodies. They have much therefore been led out of the way, who have been taught, that the several *Species* of Bodies are owing to any internal *substantial Forms*, distinct from the peculiar Modifications above-mentioned.

What is to be understood by the Word Quality, is so admirably well explained by that great Master of Reason and good Sense, Mr. *Locke*, that what I shall here insert will be chiefly a Transcription from him: In which if any thing seems a Repetition of what has been said before, I desire it to be excused, because I am unwilling to cite any thing imperfectly from so excellent a Person.

Whatsoever the Mind perceives in it self, or is the immediate Object of Perception, Thought, or Understanding, is called an *Idea*; and the Power to produce an *Idea* in the Mind, is called a *Quality* in the Subject wherein that Power is. Thus a *Snow-Ball* having the Power to produce in us the *Ideas* of *White*, *Cold*, and *Round*; the Powers to produce those *Ideas* in us, as they are in the *Snow-Ball*, are called *Qualities*; but as they are Sensations or Perceptions in the Understanding, they are *Ideas*.

Qualities thus considered, are either such as are utterly inseparable from a Body, under what Mode of Existence soever it be; such as it constantly keeps through all the Changes and Alterations it goes through from any external Force whatsoever; and such as Sense constantly finds in every Particle of Matter which has Bulk enough to be perceived, or the Mind finds as necessarily inseparable when less,
than

than to make it self singly taken notice of by the Senses: Of this kind are Solidity, Extension, and Figure, which are properly call'd original or primary Qualities: or else such as in truth are nothing themselves, but have a Power to produce various Sensations in us by means of the different Dispositions or Modifications of these primary Qualities, that is, by the Bulks, Textures, and Motions of the insensible Parts of those Bodies that are said to be endow'd with them, as Colours, Sounds, Tastes, and the like; and these may be called secondary Qualities.

It will be farther useful to consider, by what means it is that we come by the Ideas of the Qualities of Bodies in our Minds, which upon Enquiry will be found impossible any other way than by some Impulse made upon the Senses by those Bodies, either immediately or mediately. For a Portion of Matter under whatsoever kind of Modification, cannot any ways affect another, tho' never so near it, but by Contact; if therefore external Objects are not united to our Minds, when they produce Ideas in them, 'tis evident that some Motion must be continued by the Nerves and Spirits from that Part first affected by the Object, to the Seat of Sensation, there to excite those particular Ideas; and likewise that since Bodies do affect, or that the Qualities of Bodies are at a Distance perceivable by the Senses, 'tis necessary that those Impressions be made either by the Mediation of some other Bodies which interpose, or by the Motion of insensible Particles arising from the Bodies themselves, and affecting the sensory Organs. From Sight and Touch we come by the Ideas of the essential and primary Qualities of Bodies, Solidity, Extension, &c. which Qualities, when not perceived or taken notice of by the Senses, are as absolutely and as necessarily in those Bodies,

Bodies, as when under such Perceptions : But the Ideas of secondary or accidental Qualities, depending upon particular Modifications, and arising from the Operation of the insensible Particles of Bodies upon the Senses, whatever may by mistake be attributed to them, are in truth nothing in the Objects themselves, but entirely depend upon the various Dispositions of the primary and essential Properties of Matter, being nothing else than Powers in Bodies of producing those Sensations in us ; for what is Sweet, Red, or Heat in Idea, is nothing but the Bulks, Figures, and Motions of the insensible Parts of those Bodies, which are said to be Sweet, Red, or Warm.

Flame is said to be Hot and Light ; Snow White and Cold, and *Manna* White and Sweet, from the Ideas they produce in us ; which Qualities are through Mistake thought to be the same in those Bodies as their Ideas are in us : and yet he that will consider that the same Fire which at a Distance produces the Sensation of Warmth, does upon a nearer Approach produce a very different one, which is that of Pain ; will scarce be brought to affirm that Pain is actually in Fire, because it gave him such a Sensation, although perhaps before he believed Warmth to be in it for the same Reason. A Person will be very ready to affirm, that Whiteness and Coldness are in Snow, but will not allow Pain to be so ; and yet Snow will produce all those Ideas in us, and all by the same means, to wit, by the Bulks, Figures, and Motions of its insensible, solid, and consistent Parts. Now the particular Bulks, Figures, and Motions of Fire or Snow are actually in them, whether the Senses perceive them or not ; and therefore they very properly may be called essential and real Qualities, because they really and necessarily exist in those Bodies ; but Light, Heat, Whiteness,

ness, or Coldness, are no more really in them than Sickness or Pain is in *Manna*.

A Piece of *Manna* of a sensible Bulk, has the Power to produce in us the Idea of a round or a square Figure ; and by being moved from one Place to another, the Idea of Motion. This Idea of Motion represents it, as it really is in the moving *Manna* ; a Circle, or Square, or any other mathematical Figure, is the same whether in Idea or Existence ; and thus both Motion and Figure are really in the *Manna*, whether we take notice of them or not. But besides these Properties, *Manna* has sometimes a Power to produce the Sensations of Sickness and Pain ; yet Sickness and Pain are not in the *Manna*, but only Effects of its Operations upon us, and are no where when we do not feel them: This every one will readily agree to ; and yet it is hard to be brought to think, that Sweetness and Whiteness are not really in *Manna*, which are but the Effects of its Operations, by the Motion, Size, and Figures of its Particles on the Eyes and Palate ; as Pain and Sickness are nothing but the Effects of its Operations on the Stomach and Guts, by the same means.

That all the Qualities or Vertues of Bodies depend only on the different Modifications of those essential and primary Qualities before-mentioned, may be farther made appear by a great number of Instances. That a Tincture of Red Roses may only by a few Drops of Spirit of Vitriol be very much heighten'd, or by Spirit of Sal Armoniack changed Green. That the Purging Quality of Rhubarb may by toasting at the Fire, be entirely destroy'd, and the Rhubarb render'd astringent ; and several other Alterations of the like Nature are known by common Experience. As likewise that an Almond from a clear white Colour may be alter'd into a dirty one, and from a sweet pleasant Taste into an oily one ; and all only by the beating

beating of a Pestle; which cannot but put it beyond doubt that these secondary Qualities of Bodies do entirely depend on the particular Modifications of the former; and that besides Solidity, Bulk, Figure, Extension, Number and Motion, all the other Affections of Bodies, whereby we range them into several Species or Kinds, and distinguish them from one another, are nothing else but several Powers in them, resulting from and depending upon the various Dispositions and Modifications of those primary and essential Qualities; whereby they are fitted, either by immediately operating upon our Bodies, to produce several different Ideas in us; or else by operating on other Bodies, so to change their primary Qualities, as to render them capable of producing in us Ideas different from what before they did. As when the Sun melts or blanches Wax, or Fire renders Lead or any other Metal fluid, that was before hard and consistent; the different Appearance, which the Wax so melted or blanch'd, and the Metal so melted do exhibit, are not from any real Qualities in the Sun or Fire, but only Powers in them, so to alter the Textures of those Bodies as to appear very different from what they did before: and therefore as the different Appearances which the melted or alter'd Bodies do exhibit, as indeed also all other Bodies, may properly be called secondary Qualities immediately perceivable, so the Powers one Body has of changing another, that is, by altering the present Form in which it exists, as the Sun Wax, or Fire the Metal, from a consistent into a fluid State, may be termed not improperly Qualities mediately perceivable.

The *Qualities* and Vertues of all material Substances thus appearing to operate upon us, or upon other Bodies, either by their immediate Contact, or by their Impulse upon interposing Bodies; and it being evident from Experience, that several do affect others

at a Distance by the Emission of subtile *Effluvia*, as odoriferous Bodies; and these being corporeal, their Motions and Affections are determinable by the same Laws and Conditions, as of those of the most bulky and sensible whatsoever. As suppose A, to be a Body from whence any Quality exerts it self round about, (the Air, or *Medium* through which it passes being in no Flux) according to the right Lines A e, A f, A G, &c. the Efficacy of the Quality, whether it be Heat, Cold, or Odour, will be at the same Distances equal, and as the Thickness of the Rays or exhaling Particles; but when the Rays of the inner Circle, or spherical Superficies, b c d H, come to be farther extended, according to the supposed Direction in right Lines, to the other Spherical Surface, e f G K, they will be much less thick than before, that is, the Qualities of the Body A will be much more remitted or abated at the Distances e f G than at b c d; and such Remission or Abatement will be in a duplicate *Ratio* of the Distance from the Center of Radiation, or the Qualities Exertion; or they will be remitted in Proportion reciprocally as the Spaces they take up: That is, if the outer Surface be double of the inner, the Rays there will be but half as thick. But since Spherical Surfaces are as the Squares of their *Radii*, therefore the Efficacy of the Quality in the inner Surface will be to that of the outer, as the Square of A e is to the Square of A b; or, which in other Words is the same, the Remission of the Efficacy of the Quality in the outer Superficies will be to that of the inner, as the Square of the Radius of the outer exceeds the inner.

By the same Methods are determinable the Efficacies of all corporeal Qualities, howsoever influenc'd or affected by circumambient Bodies, because, as was said before, the most subtile *Effluvia* that can possibly

possibly exhale or be emitted from any material Substances, as they still remain something corporeal ; their Motions, Occursions, and all Alterations occasioned by them, must necessarily be by such Laws and Conditions, as the most bulky Bodies of the Universe are govern'd by. From all which, I say, it appears very plain, that the Properties and Vertues of all Bodies whatsoever are knowable only upon Principles whose Evidences arise from Sense ; but that their Operations and Affections depend upon, and are to be accounted for from the Influences of immaterial Agents, called Forms, Qualities, Souls, or any other Name whatsoever, is only a meer Chimæra, a Creature of the Imagination, and without any manner of Foundation in Nature.

Having thus explained what is to be understood by mechanical Knowledge, and proved that by the same Guides and Assistances all that we know of material Substances is taken in ; it follows next to shew, that a human Body also must be considered in the same Light. For notwithstanding the Excellence of its Composure, and the wonderful Variety and Fineness of its Parts, upon which so many extol it, and seem to raise it to a strange Preheminence above the rest of the Creation ; notwithstanding all this, I say, when it comes to be considered with regard to its Structure, and the Mechanism by which the Offices of its several Parts are carried on, in order to find out the best Methods, either of continuing those Functions perfect, or of regulating them when disordered, he will find himself under a Necessity of using it no better than any other Part of the material World of much viler Account : Because herein he cannot come at any manner of Certainty, without taking it to Pieces like any other Machine, and considering all the Parts of the Movement as so many Springs, Wheels, and the like, which by

Virtue of their particular Figures, Magnitudes and Contextures, are enabled to carry on their several Motions.

It has something in it that would move ones Laughter as well as Amazement, to reflect upon the Extravagancies of some subtle crafty Heads, who, to account for the Operations of a human Body, have abstracted and spiritualized upon it (if it may be so termed) so far as to assign every particular Part some sort of Intelligence or Soul, which rules and manages it in the Performance of its Offices. This wonderful Contrivance indeed not only shews abundance of Penetration in the Authors of it, but also saves a great deal of Trouble in the manner of its Attainment; for by this we come at once to know that the *Stomach* digests, that the *Liver* sanguifies, and that the *Brain* makes Spirits, because these Parts have such Faculties presiding over them; which, as long as they are pleased, make one digest, another sanguify, and so on, as the Occasions of the Constitution require. And upon this means likewise there is laid open a direct and pleasant Road to the Art of Healing, when any one Part happens to be distemper'd. For to this there is no more required, than to apply such Remedies, as the indisposed Faculty delights in, and will be comforted and strengthened by. And of this kind, we never fail of being plentifully stored, by the indefatigable Searches and Discoveries of such as have been conversant with the Planets, and are versed in the occult Sciences. So that every Medicine given to rectify the Disorders of any particular Part, seems only to be a kind of Sacrifice to the presiding Deity of that Part.

And this is very like to be the Reason how Persons of warm Imaginations and great Devotion, so very easily come to be Physicians, because the Merit of
the

the Sacrifice is so much enhanced by the Qualifications of the Persons who offers it.

But that extraordinary Chymist *Van Helmont* has carried this way of Reasoning still much farther; and to make the Work short, has set but one general Deity over the whole, which he calls the *Archæus*; and by this he has not only shewed a commendable Zeal against Pollytheism, and thrown out of the human Body all those *Pagan* Deities, which had their Rise only from the Invention of a corrupted Generation, but has also laid open a still much nearer way to the Art of Healing; if any one could be so happy to find out that particular Oblation, which his *Archæus* would vouchsafe to accept of; but this is what I think yet remains undiscovered, or at least is reserved as a religious Secret amongst the Adepts of this Philosophy. But upon this View, *viz.* to find out something for this great Purpose, it is that the *Dispensatories* are stuffed with *Pollychreston's*, *Panpharmacon's* and *Panacæa's*, and I know not how many universal Medicines. For let the Distemper be what it will, or seated in whatsoever Part; yet as it has its Rise from some Disturbance given to the *Archæus*, so whatsoever can be found to quiet and appease this presiding Power, will also bring about a Cure, by restoring it to good Temper, and bringing it thereby to govern and carry on all the several Functions as before.

But to return from these abstruse Speculations about Intelligences, and I know not what imaginary Beings, into the Road of common Thinking, where the gross Senses of Seeing and Feeling are our only Informers and Guides: A human Body, I say, so far as it is a Composition of the same Matter with that of all other corporeal Beings, its Structure and Operations cannot be enquired into and accounted for, but upon the same Method of Procedure as we are

are under a Necessity of using with all other Portions of Matter. For even the *animal Spirits* themselves, concerning which there are so many fine things said, if by them is meant nothing but what is corporeal, their Natures and Efficacies are to be enquired into upon the very same Grounds, and all their Properties are derived only from the same Causes as those of much grosser Bodies, which is the particular Modifications of their Figures, Extensions, and Motions: And upon this Foot the several Parts of a human Body are to be enquired into, and examined as those of any other Machine; and it is necessary to be informed of the Figures and Contextures, first of the more principal, and then of the more subordinate or under Parts, and likewise of all the Conditions and Requisites of their Motions: and when thus much is known, it will be a Task of no great Difficulty to learn by what Instruments and Means it will be best to make use of duly to carry on those Motions, or to regulate them when disordered.

And to this Purpose, notwithstanding the wonderful Variety, both in the Number and Structure of its several Parts, yet they are throughout the whole to be regarded as so many mechanical Instruments or Powers, all in Subordination to one another, and suited in such a manner as to agree in the Support of the whole, and in the due carrying on all the Purposes of the Oeconomy; and seeing their Dependence upon, and Subserviency to one another, is so ordered, that any one Part cannot well suffer without bringing a Disorder likewise upon the whole, the Structure and Powers of the most minute Parts are, as in any curious Movement, to be known, in order to find out the properest Methods of regulating such Disorders.

But in all this, the first Steps ought to be taken from the most simple and easy Notices we have of it,

it, and from them by Degrees to enter into its most minute Parts, in order to explicate its more remote and unheeded Properties. And to this end it first very naturally comes to be considered as a Composition of Solids and Fluids; the Solids being vascular, it is necessary to enquire into their Capacities, Figures, and Positions; the Fluids also being found of different Kinds, and to move with different Celerities, the Causes of it come to be enquired into, and the Instruments by which their respective Motions are communicated, with all the other Requisites to such a Contrivance.

Farther it appearing impossible that the immediate Cause of the Fluids Circulations should be in themselves; and finding also that as they pass out of one Vessel into another, they undergo considerable Changes, it comes then to be known by what particular Mechanism it is in the Solids that they are enabled to give to the Fluids such Motions, and occasion such Changes upon them as they pass them from one Part to another: And herein since we are conversant altogether with corporeal Agents, we shall be obliged, as in all such Cases, to go upon sensible Evidences; and therefore must consider the Solids as certain mechanical Powers suited for those Ends, or Instruments subserving thereunto; and hence they are divided into, and looked upon, according to the Figure and Use of each Part, as Wheels, Pullies, Wedges, Leavers, Screws, Chords, Canals, Cisterns, Sieves, or Strainers, and the like.

The Consequences likewise of the Motions of the Solids upon the Fluids must be considered, which is found continually to make some Change upon them, either as they pass them in Part into other Vessels, in order to supply a Juice of a different Nature, for some farther Use, or else by convenient Outlets to expel them quite out of the Body. Up-
on

on themselves also they cannot but have this Consequence of breaking finer and wasting that Liquor, with which it is necessary that they should continually be moistened, as in the Movement of any other Machine. Upon both these Accounts then there will continually be some Loss or Waste of Substance, which it will be necessary to recruit by fresh Supplies in Proportion to what is so wasted; of what kinds also these ought to be, must be known, and the means by which they are best fitted and prepared for the several Occasions of the Constitution.

Upon this View there appears to be two general Seats of a Distemper, either the Solids or the Fluids; when it is found therefore to have its Rise in a general Disorder in the Solids, by their being too slack, or too strait, or the like, then such Remedies may be applied as are known to be effectual in the removal of that Disorder; and when by the same means, it is known how any partial Disorder is brought about, a Person acquainted with their Make and Subordination to one another, will soon find out the most proper means of Cure. From any general Disorders likewise of the Fluids, as their being too thin or too viscid, and the like, and an understanding in the means by which to oppose them, a Person gradually enters into all their partial Disorders. and with equal Certainty learns how to apply proper Remedies.

Now all these Matters coming under our Notices only by the Information of our Senses, and in all our Knowledge about them being conducted only by mechanical Rules, or the demonstrative Laws of Motion, no farther than they will carry us can we know any thing herein; but so far as can be proceeded upon those Principles, will it be attended with Certainty, and no other way is it possible to arrive to hereupon any useful satisfactory Knowledge.

Thus

Thus when it is known by what particular Contrivance and Mechanism in the Heart and Arteries it is that the Blood is thrown forward, and continued throughout its whole Circuit, it likewise is certainly known, either how to diminish or increase its Motion, and that a great many ways and with equal Certainty ; for herein cannot any thing be more fully demonstrated ; than that adding to the contractile Force of the Vessels, is the same, as diminishing the Blood's Resistance, either by a Substraction of its Quantity, or by any means encreasing its Fluidity ; or also that by weakening the contractile Force, will the same ensue as upon an Augmentation of the Quantity of Blood, or by an Encrease of its Viscidity.

Farther also when it is known that the Discharges or Secretions made from the Blood, are altered and determined by the Conditions of the Blood's Motion ; so may a Person by the same means know what Methods ought to be taken to influence those Secretions, and also be certain of their Consequences.

In the whole then so far as a Person can consider a human Body as a Machine, and by the known Laws of Motion demonstrate the Powers and Operations of its several Parts, so far may be with Certainty known how to manage it, in order to produce any Change therein ; that is, if he has proper Instruments, and upon the same Principles understands their Efficacy and Manner of Application. A great number indeed of the Instruments by which it is either injured or mended, are so small as to render it impossible with strict Certainty to determine their Efficacies, because it is not possible exactly to assign their Bulk, Figures, and Motions ; and therefore cannot their manner of working upon the Animal Fluids be positively known. The Seat of the
Disturbance

Disturbance also may sometimes lye so many Stages from the first taking in of a Medicine, that if at its first Entrance into the Stomach, its Properties were never so certainly known, yet by the Actions of the several Parts upon it which it passes thorough, and the different Mixtures and Strainers it meets with by that time it gets to the Scene of Action, its first Properties may be quite destroyed, and new ones acquired, the Efficacy of which after so many Changes can never be determined; and this may be the Reason why the *Gout*, and some other Chronick Distempers remain the *Opprobria Medicinæ*. But notwithstanding all this, I say, a Person that truly enters into the Mechanism of the Body, will seldom stand in need of such Helps, especially in Chronick Cases; because he will often find a much nearer way to the Seat of the Distemper, than by the Stomach and Guts, and be able to do much more by *Exercise*, *Bathing*, the *Flesh-Brush*, and *Topicks*, than by long Courses of the most celebrated *Alteratives* or *Sweetners*. And thus when there are Symptoms of a præter-natural Acidity in any of the Juices, although I cannot be certain how much *Crabs Eyes* will destroy it, or in how long time, or whether it can ever be done by it or no; yet if the Circumstances and Condition of the Patient will upon other Accounts admit of it, a Person may with the utmost Certainty depend upon overcoming it by any means that strengthen and encrease the Vibrations of the Solids, which Exercises or Cold Bathing cannot fail to do; for by this the Motions of the Fluids must be encreased, by which such Particles as were before pointed, and gave that Acidity to them, will have by Degrees their *Spicula* broke, and their Angles struck off, and thereby lose that Property.

In any other Case likewise where there is only a partial Disorder, suppose of the *Liver*, or any other of the *Viscera*, according to the Symptoms and State of the Secretions, it may be certainly known by one who understands the Make and Office of that Part, whether it be from too lax or strait a Tone in the Part it self, or from too great or too sparing a Supply of Fluids, or from the Distemperature of some neighbouring Part with which it communicates; such means therefore a Person will not fail to find out by which with Certainty to remedy that Disorder, if it falls not in with some Contra-Indication; and then only it is that a Cure cannot be effected. Thus if from a preternatural Viscidity of Blood upon too lax a State of the Solids, arises a Difficulty of Breathing, or what is commonly called a *Dyspnea*, there is nothing more certain than that a Substraction from the Quantity of Blood will relieve this Complaint: But because the Solids are already supposed to be weak, if at the same time some *Stimulus* is not given to them, or by some means or other their Contractions increased, the remaining Blood cannot give them so much Spirits as a greater Quantity; and therefore will their Contractions grow weaker, consequently very soon after the Blood will grow more viscid, and the old Complaints return with Aggravation; and therefore is not its Cure to be attempted by Bleeding alone, because it may so prove injurious, and even in Cases where there is no Possibility of doing without it.

But there is something farther, besides Physical Agents, which has to do in a human Body, and which by certain Experience is able to bring about strange Changes therein, and that is the Mind, or Soul, or Power of Thought, whatsoever it is called. Nothing is more obvious than the Disorders
which

which have no other manifest Cause than in the Passions of the Mind, and likewise how far the Dispositions and Affections of That will go in the removal of a great many ill Habits. Herein therefore, by not being able to determine the Force and Efficacy of such Agents as cannot be brought under the Notices of our Senses, we are obliged to proceed by other Measures, and trust altogether to Observation and Experience.

Insomuch therefore as a human Body can be considered as a Machine, and so far as the Properties of all those things with which it may be influenced, can be known upon the same Principles, so far it is attended with Certainty; for it is in it self altogether impossible to know any thing of the Nature and Properties of it so far as it is a Composition only of the same Matter of which all other Bodies are made up of, but upon those Grounds as are attended with Demonstration, as before proved. But as for what concerns it otherwise, with Relation to such Causes as cannot be brought under sensible Evidences, it must always remain doubtful, beyond what common Observation does assist us. Yet as most that comes under a Physician's Regard is of the former kind, so the utmost Application ought to be made to those Means by which such Certainty is only attainable; and there so very seldom turns up any thing of the latter kind, that a Person used to that way of Reasoning will rarely meet with Cases wherein he will not have some Footsteps to trace out by, a safe, if not altogether an effectual Method of Cure; for although one cannot tell the Manner and Procedure by which any Affection of the Mind does bring about any particular Disorder, yet by the Disorder it self, and the State of the Body under it, it may without much Difficulty be guessed whether it influences it, by Astringing, or Relaxing, or in any o-

ther particular manner modifying the Solids ; where-
by upon careful Observation they come at last to be
considered as such Physical Agents as are known to
be attended with the same Consequences, and there-
fore come to be treated in the same manner, either
in forwarding their Advantages, or opposing their
Disorders.

THE

T H E C O N T E N T S O F T H E I N T R O D U C T I O N .

	Page
U P O N what Grounds Geometry has of late been made use of in the Study of Physick.	11
The only Means of Information about corporeal Substances; is by the Senses.	12
How Sanctorius came to succeed, so well in his Aphorisms.	ibid.
Uncertainty in Physick, not from the want of sufficient Evidences, but from the Ignorance of the proper Means of obtaining it.	ibid.
The Capacities of the Mind needful to be known, before a Person engages in any Study.	13
The Mind fitted to consider different Subjects, very different ways.	14
Instances given in three Propositions, all knowable different ways.	ibid.
The particular procedure of the understanding upon each.	15, 16
Certainty, either Hyistorical, Moral, or Demonstrative, and their different Foundations.	17
All Propositions concerning material Substances, of the latter kind, and depend only on sensible Evidences.	18
All the properties of Matter, knowable only by the Information of the Senses, and fully discovered by them, as Solidity, Extension, Figure; as likewise those Ideas which necessarily flow from them, as Space, Motion, Attraction, and the like.	19—26
	The

	Page
<i>The Properties of Matter, either Essential or Accidental; of the Essential, some will not admit of Alteration, as Solidity, others may be varied as Figure.</i>	26
<i>These the materials of all knowledge in Physick</i>	26
<i>The Accidental Properties, only different Modifications of the other.</i>	27
<i>How Motion is influenced by the Figures and Magnitudes of the moving Bodies.</i>	28, 30
<i>The Laws of Motion, necessary to be known.</i>	ibid
<i>No Body can operate upon another but by Contact.</i>	30
<i>To know what one can do upon another, it is first necessary to know the Bulks, Figures, and Motions of its Parts.</i>	31
<i>By that it is known how Water is Frozen, or how a Metal is fluxed.</i>	32
<i>Mechanical Knowledge is what keeps in View the Figures and Bulks of the Bodies under consideration, and determines their Efficacies by the known Laws of Motion.</i>	33
<i>It is the same in Physicks, as the Rules of Logick in matters Speculative, and therefore is often of Service, by Pictures and Diagrams to keep distinctly in View, whatsoever is the Subject of the present Inquiry.</i>	34
<i>Occult Qualities, Sympathies, and whatsoever lets the Mind go off from the Image of something Corporeal is delusory.</i>	35
<i>Substantial Form, what</i>	36
<i>Qualities of Bodies, explained from Mr. Locke.</i>	ibid.
<i>Either Primary and Secondary, or Essential and Accidental.</i>	37, 39
<i>On what both depend.</i>	40
<i>How to Determine their Efficacies from Mr. John Keil.</i>	41
<i>The Vertues of all Bodies determinable only by the same Means.</i>	42

	Page
A Human Body, can be considered no other ways than as a Machine.	42
The Term Faculty, as commonly applied, exposed.	43
Whence Enthusiasts commonly pretend to Physick.	ibid.
Whence the Notion of Universal Remedies.	44
All the Parts of an Human Body, and even the Animal Spirits, have no other Properties but in common with other Bodies, and are subject to the same Laws.	45
To be seperately considered as the constituent Parts of any Machine.	46
Divided into Solids and Fluids.	47
Their Powers and Operations, how far to be known with Certainty.	48
The Vertues of Medicines to be considered only as Mechanical Instruments, and known only by the same Rules.	49
The Operations of the Mind may so far be brought under the same Laws, as by their sensible Consequences they have been found always attended with such certain Effects.	49, 50
It very rarely happens that a Person, well instructed in this way of Reasoning, is at a loss how with Certainty to influence the Constitution either for its Preservation or the Regulation of its Disorders.	

FOR want of closer Attendance upon the Press, some Errors have escaped Correction; but as they are not such but what the Reader may easily discern as he meets with them, I give my self the Trouble only of Advertising him in the Introduction to put in Page 17. Line 20, 21, 23, 24. L for E, and P. 41. l. 5. to insert Fig. 7.

The Contents of the Sections and DIGRESSIONS.

	Page
Sect. 1.	
<i>Of Insensible Perspiration.</i> —————	I
Sect. 2.	
<i>Of Air and Water.</i> —————	75
Sect. 3.	
<i>Of Meats and Drink.</i> —————	III
Sect. 4.	
<i>Of Sleep and Watching.</i> —————	161
Sect. 5.	
<i>Of Exercise and Rest.</i> —————	207
Sect. 6.	
<i>Of Venery.</i> —————	240
Sect. 7.	
<i>Of the Affections of the Mind.</i> —————	263

D IG R. 1. <i>Of Fermentation and Corruption, so far as they relate to the Animal Fluids</i>	224
Digr. 2. <i>Concerning Agues and their Cure, without the Bark.</i>	178
Digr. 3. <i>Concerning the Elasticity of an Animal Fi- bre.</i>	211
Digr. 4. <i>Of the difference between an Inflammatory and a Nervous Fever.</i>	

Medicina Statica.

SECT I.

*Of Insensible PERSPIRATION, as it appears
by Weight.*

APHORISM I.

IF there daily be an Addition of what is wanting, and a Substraction of what abounds, in due Quantity and Quality, lost Health may be restor'd, and the present preserv'd.

EXPLANATION.

PERSPIRATION, both as to the Matter of it and its Quantity, is so absolutely necessary to the well being of a Human Body, that a Disease can neither be removed, nor Health maintained without it be rightly performed; and where it is so, there must be both a continual Wast of substance, and a proportionate Supply: The former is occasion'd by the constant Circulations of the Animal Fluids, and the forcible Contractions and Attritions of the Solids, whereby such Parts as are found not suitable for the Accretion and Nourishment of the Body, at length become broke small, as to fly off thorough such Passages as are by Nature provided for that Purpose; and this makes it necessary that there be a proportionate Recruit by daily Food. And therefore,

A P H. II.

If a *Physician* who has the Care of another's Health, is acquainted only with the sensible Supplies and Evacuations, and knows nothing of the Wast that is daily made by Insensible Perspiration, he will only deceive his Patient, and never cure him.

A P H. III.

He only who knows how much, and when the Body does more or less insensibly perspire, will be able to discern, when, and what is to be added or taken away, either for the Recovery or Preservation of Health.

A P H. IV.

Insensible Perspiration alone, discharges much more than all the sensible Evacuations together.

EXPLANATION.

This *Aphorism*, although it may appear at first View very strange to such who are not well acquainted with the Make and Oeconomy of a Human Body, and particularly with the Discharges made this way, yet there is hardly any one thing relating thereunto, either of greater Importance, or more easily to be proved true. The Quantities of Meat and Drink taken in, in any given Time, being readily computed, as likewise the sensible Evacuations made in the same time; these compared with the Increase and Dimunition of Weight the Body has thereby undergone, will make it very easie to calculate, and with the nicest Exactness, how much in that time, the Wast by Insensible Perspiration has been, in Proportion to all the Sensible Evacuations; which will be found to be very large, as we shall see in the following *Aphorisms*. It ought therefore to be of the utmost Concern to a *Physician*, not only thoroughly to acquaint himself with the nature of this Evacuation, but likewise thoroughly to know by what means it is to be promoted or lessen'd, according to the several Exigencies of his Patient; either for the Preservation or the Recovery of his Health.

A P H. V.

Insensible Perspiration, is either made by the Pores of the Body, which is all over Perspirable and covered with a Skin like a Nett ; or it is performed by Respiration through the Mouth, which usually in the space of one Day amounts to about the quantity of half a Pound, as may plainly be made appear by breathing upon a Glafs.

E X P L A N A T I O N.

By Pores, are to be understood the Excretory Ducts of the cutaneous Glands, both internal, as of the Guts and *Viscera*, and the common coverings of all the Muscles, as well as the external of the outer Skin. And Nature has so provided, that if by any external Cause this necessary Evacuation is hinder'd in any one Part, it is always increased in another, or else a Distemper will ensue ; for which reason, when the Coldness of the external Air, which more immediately affects the outer Skin, lessens the insensible Perspiration that way ; either the sensible Evacuations are encreased, as commonly the Urine, or greater Quantities are carried off by Respiration, from the Lungs and Parts about the Mouth, or perspired into the Cavities of the Guts ; which afterwards are discharged by breaking Wind, either upwards or downwards : For as long as the Impulse from within remains the same, wherever there is the least Resistance, there always will be the greatest Derivation of the Perspirable Matter. And from hence it is that we so frequently find when the Body is more than usually expos'd to external Cold, Gripings, and great uneasinesses in the Bowels, which is nothing else but some part of the Perspirable Matter that ought to have passed the outer Skin check'd by the Cold, and by an opener Passage within, thrown off that way. To this Purpose 'tis likewise very observable in *Dogs*, whose outer Skin is very little Poreous, that in hot Seasons and upon much Exercise, whereby the more than ordinary Motions and Attritions of their circulating Fluids produce larger Quantities of Perspirable Matter, they throw off a vast deal from their Lungs in Respiration, and the Parts about the Mouth, insomuch that their breath appears like thick Smoak.

Lewenhoeck pretends by the help of his Glasses to have discovered the Texture of the *Cuticula* to be scaly, and that those Scales cover one another in several Lays, more or less according to the different thickneses of the Scarf-Skin in the several Parts of the Body. In the Compass of one Cuticular Scale, he reckons there may be five Hundred Excretory Channels, and that a Grain of Sand will cover one Hundred twenty five Thousand Orifices through which we daily perspire.

A P H. VI.

If eight Pounds of Meat and Drink are taken in one Day, the Quantity that usually goes off by Insensible Perspiration in that Time, is five Pounds.

EXPLANATION.

Whence appears the Truth of the fourth *Aphorism*: And that what is wasted by insensible Transpiration is to all the sensible Evacuations together, as Five to Three. Hence also it ceases to be a Wonder, that the Body becomes so much disorder'd by taking Cold, (as it is commonly call'd, which is nothing else than a *Perspiratio Diminuta*,) more than by any Obstruction of the sensible Evacuations.

A P H. VII.

The Quantities insensibly perspir'd, vary according to the Differences of Constitutions, Ages, Countries, Seasons, Distempers, Diet, and the rest of the Non-naturals.

EXPLANATION.

So that it is not possible exactly to determine the Quantities of the Perspirable Matter, convenient to be discharged in all Persons, nor are they in the same Person always alike, because they are influenc'd and alter'd according to the several Causes above-mention'd; so that Quantity which is beneficial to one, may be more or less than what is convenient for another, and likewise not always and at all times of the Year convenient for the same Person. All which a
careful

careful Observer will soon be appriz'd of, as may be further collected from several of the following *Aphorisms*.

A P H. VIII.

If the Body be weighed in the Morning before and after Sensible Evacuation, then it will be easie to determine the Quantity that is wasted that Night by Perspiration.

A P H. IX.

If the Body encreases beyond its usual Weight without Eating or Drinking more than customary, there must either be a Retension of some of the sensible Excrements, or an Obstruction of the Perspirable Matter.

A P H. X.

The Body continues in the same State of Health, as long as it returns to its wonted Weight, without any increase of the sensible Evacuations: But if it comes to its Standard by larger Discharges, either by Stool or Urine, than ordinary, it then begins to decline from its former Health.

EXPLANATION.

There is so great a Difference between the Matter of Insensible Perspiration, and that of the sensible Discharges; that the lessening one will by no means compensate for the superfluities of the other, unless it be in very fresh Indispositions: For what ought to pass through the cutaneous Pores, if by any means it is stop'd in the Excretory Ducts, or prevented from getting into them, it will be very difficult to prevent the Injuries that may arise from it, by enlarging the other Evacuations; because by its stay in the Blood and other Juices, there will be made such Alterations as cannot easily be remedied by simple Evacuation. The

Body therefore keeping to the same Standard of Weight by a regular Discharge of the Perspirable Matter, is a certain sign of good Health ; but when that fails, and Nature endeavours to make amends by an encrease of the Sensible Evacuations, it is a great chance but some Distemper ensues ; for

A P H. XI.

If by Weight it appears, that Perspiration is diminish'd ; the following Days it must either be increased, or some sensible Evacuation enlarged ; or else there will be laid a Foundation for a Cachexy, or a Fever.

A P H. XII.

A larger Perspiration, and greater sensible Evacuations than usual, cannot be at the same time.

A P H. XIII.

If any one sensibly evacuates more than he ought, at that time he perspires less.

EXPLANATION.

These are both true for the same Reason, for the increase of the sensible Evacuations, especially by Stool and Urine, cuts off the supply of the *Materia Perspirabilis* in Proportion to such an increase, because what is taken in by the Stomach, and design'd for Nourishment, is thereby carried away before it can mix with the Blood and other Juices, and go those Circuits as are necessary to convert it either into nutritious Juice, or break it into Parts so small, as will admit of its Exhalation through the Skin.

A P H. XIV.

To evacuate too much by Stool, Urine, or Sweat, and perspire less than usual is bad.

A P H. XV.

A P H. XV.

If a Body returns to the same Standard every Day, without any change in the Quantity of Perspiration, there will be constantly preserved a perfect Health, and no need of Critical Evacuations.

A P H. XVI.

Bad Qualities arise when the Body is not one Day the same in Weight as another.

EXPLANATION.

Because such Changes cannot happen, either without some Disorders in the Evacuations, or Irregularities in Eating or Drinking, from any of which the whole Constitution cannot but suffer.

A P H. XVII.

A Person may certainly conclude himself in a State of Health, if upon ascending a Precipice he finds himself more lightsome than before.

EXPLANATION.

The Action of the Lungs in Respiration, depends so much upon a good Constitution of the Blood, from whence all the other Juices are made, that 'tis almost impossible there should be any considerable Fault in the Blood, and the Lungs not some way or other affected by it: And likewise as the Invigoration of all the Solids, so as to render them ready for their proper Motions, arises from the same Fluid; it is a certain Argument of a healthful State, when any difficult Exercise, as walking up a steep Ascent, can be performed without any Faintness or Lassitude; and when on the contrary, thereby the Body seems lightsome and fitter for Motion; which Sensation a sound Body perceives, because by the Actions of the preceding Exercise, all the Animal Fluids are put into brisker Motions, the thinner Secretions performed in greater Quantities, but especially that

in the Brain, by which the Spirits are derived more plentifully into the Muscles, and the grosser Parts are broke small enough to pass off by Insensible Transpiration. But of Exercise that has this Effect, it is to be understood only such as is moderate; otherwise the best Constitution may be strain'd, the Fluids too much broke and wasted, and the whole Oeconomy thrown into Disorder.

A P H. XVIII.

From too great Fullness arise bad Qualities, but not, *vice versa*.

EXPLANATION.

That is, good Qualities do not arise from Emptiness. Excess on neither side can be good; because several ways the Body may be injur'd thereby.

A P H. XIX.

Too great a weight and fullness may be lessen'd by Sensible or Insensible Evacuations, either of digested or undigested Matter, and it is good so to do; but although it lessens the Load, yet it leaves ill Qualities behind.

EXPLANATION.

By Fullness may be understood, either a *Plethora* or a too great increase of any of the Fluids, by a Diminution of some of the necessary Evacuations, which cannot but injure the Constitution, both by altering the Textures and Cohæsiions of the Fluids, and by laying at the same time too great weight upon the Solids: But the contrary is not always true, because there may be a Distemper when the Secretions are too large, and the Body too much emptied. And in the former Case, although a *Plethora* and too great a Fullness may be taken away by Bleeding or Purgative Medicines, so as to reduce the Body to its natural Standard of Weight; yet 'tis a great Chance, but that during such

an Overcharge, there may be done so much Injury as cannot be removed by those Evacuations.

A P H. XX.

There are two Kinds of Insensible Perspiration the one is during Sleep, of Humours that are well digested, and after which there is an increase of Strength : The other is when awake, and arises from indigested Humours, and is weakning more or less, according to the greater or lesser Actions of the Muscles during that Time.

EXPLANATION.

This *Aphorism* and the following, well understood, lays open the whole Business of *Perspiration*, both as to the manner how it is performed, and its Consequences good and bad. The reason why that which goes off in Sleep is most beneficial, is because during that Time, the Solids are in a state of Relaxation, and the Motions of the Fluids thereby something remitted and more regular ; by which means nothing is thrown off by any of the Secretions, especially by the Cutaneous Glands, but what is thoroughly digested and fitted to pass off that way ; and likewise because during the relaxed State of the Nerves in sleep, that Secretion which is made in the Brain, and by which they are supply'd with a convenient Juice necessary for their Invigoration, is chiefly perform'd : Whereas waking, the Vibrations or Pulsations of the Solids. upon which the Motions of the Fluids altogether depend, are more disturb'd and irregular, being subject to Alterations from abundance of Causes, even from the Thoughts that pass through the Mind ; whereby the Juices are more confused, and the Secretions not so perfect, because with what is digested and suited to pass the Strainers, there will oftimes go off some Parts as cannot be yet spared without great Prejudice : Besides this Inconvenience likewise, the Solids being so much upon the stretch, and in constant Employ, that Juice which is absolutely necessary for their Invigoration, and the Continuance of their Springs, is not derived to them in such Proportions as it is wasted ; by which means there must needs be a continual decay of Strength

Strength and Spirits, although the Business of *Perspiration* goes on never so well, until fresh Recruits are supply'd by Sleep.

A P H. XXI.

That *Perspiration* which is beneficial, and most clears the Body of superfluous Matter, is not what goes off with Sweat, but that insensible Steam or Vapour, which in Winter time exhales to about the Quantity of Fifty Ounces in the space of one natural Day.

EXPLANATION.

It is very necessary to distinguish between *Perspiration* and Sweat, they differing so much from one another, that as one is useful and preserves Health, the other is always injurious and destructive of it, unless when 'tis to give Relief from some greater Evil, as a *Fever* or the like. *Perspiration* makes the Body lightsome and chearful, but Sweat faint and dispirited : And the more a Person sweats, it is certain that so much the less he Perspires ; because the latter depends upon a hardy and vigorous Constitution of the Solids, which the former is hurtful to, and destroys. The matter of them likewise differs, and is very differently supply'd ; that which insensibly perspires being such, as after a long Course of Circulations in all the shapes of the Animal Liquors, is divested of all that can be of further Service to any Part of the Body, and broke so very small, that it passes away without any Injury or Loss : But the matter of Sweat being of a thick Consistence, and supply'd more immediately from the Blood, not only robs the Body of a great deal of its Nourishment, but relaxes and supples the Fibres so much, as to destroy in a great measure their Elasticity, which necessarily weakens the Constitution, and makes it liable to abundance of Disorders.

A P H. XXII.

Insensible Perspiration becomes Visible, when there is too great a supply, or upon Faintings, or upon violent Motion.

EXPLANATION.

In Faintings the Nerves are very much relaxed, and become so slack, that the Excretory Passages are vastly enlarged, and as it were lye quite open, upon which the small force the Blood has left, is sufficient to carry through them a great deal, which otherwise would continue its Circulations longer in the Vessels, and this Matter being too gross and heavy to rise in an insensible Steam, lodges and hangs upon the Skin thick and clammy: Violent Exercise also does much the same by an increase of the Bloods Velocity, as the former by enlarging the Passages, only with this Difference, that what is forced out by an additional Impulse of the Fluids, although it is in Quantity large enough to appear wet upon the Skin, yet it is not by abundance so clammy as the other, or defrauds the Body so much of a Balsamick nutritious Juice; wherefore we always experience involuntary faint Sweat to be much more injurious than what happens upon hard Labour; the former soon sinking a Person into irrecoverable Decays and Wastings, and the latter continuing even without any apparent Prejudice a long time.

A P H. XXIII.

Insensible Perspiration accompany'd with Sweat is bad: Because Sweat diminishes the strength of the Fibres. 'Tis sometimes said to be serviceable. Because it diverts from a greater Evil.

EXPLANATION.

See the *Explanations* to the Two preceding *Aphorisms*, where the Reasons of it will manifestly appear; very much likewise to this Purpose is the following.

A P H. XXIV.

By how much the more subtile, and without apparent Moistness, Perspiration is made, it is by so much the more healthful.

A P H. XXV.

All the the thinner Excrements are the heaviest, and sink : The thick ones are lighter and swim, such as are the hard consistent Stools, the *Saliva*, and several others of the like Kind.

A P H. XXVI.

The thin Secretions abate more the Weight of the Body in Proportion to their Quantities, than the hard and consistent.

EXPLANATION.

'Tis meant here of what we call *Specifick Weight*, which is a Term so frequently used, and by a great many so little understood, that I cannot think it improper here to give a short Explanation of it. *Gravity* or *Weight* is taken in a double Sense; the one is called *Absolute*, and the other *Specifick Gravity*: By the first is to be understood, That Universal Property which we find in all Bodies whatsoever, by which they are said to *Gravitate*, or to have a Tendency towards some determinate Point; but by the latter is only to be understood, the different *Energy* or *Force* of this Universal Property in different Bodies, with Relation to one another. For as Gold and Iron, both of them are endowed absolutely with this general Property, yet in Relation to one another they are different in Weight, that is a Sphere of one is heavier than the Sphere of the other of the same Bigness, and this difference of Weight in different Compound Bodies, is called their *Specifick Weight*. Thus Gold, as before, is *specifically* heavier than Wood, and Wood *specifically* heavier than Spunge, The same Distinction is observed likewise as to Fluids, *Quick-silver* is *specifically* heavier

heavier than *Aqua-Fortis*, *Aqua-Fortis* than Water, and Water than Air.

In several Places of these *Aphorisms* regard must be had to this Distinction, or they cannot be understood, especially in this and the following. Thus what is discharged in the Form of a Liquor, as the Urine and Sweat, is *specifically* heavier than the hard and solid Excrements, and therefore the Body is sooner freed from too great a Weight by the thinner than the thicker Evacuations; which plainly points out the most certain Methods to disengage the Body from *Plethora's* and *Præternatural Fulness*; when they are not gone so far as to have brought a *Lentor* and Sickness upon the Juices, for then lessening the Quantities of the Fluids will avail but little, without giving a considerable *Stimulus* to the Solids at the same time.

A P H. XXVII.

The most Liquid Parts of our Food are likewise the most heavy, and the Solid lighter: Bread and Flesh are light; Wine and Broaths heavy. A Glass of Wine is almost three times as heavy as a Piece of Bread of the same Bulk.

EXPLANATION.

This also is to be understood in the same Sense as the foregoing, with regard to the Distinction between *Absolute* and *Specifick* Weight; and then by this *Aphorism*, Wine is almost three times *specifically* heavier than Bread.

A P H. XXVIII.

That State of Body, which has a sense of a greater Weight when there is none, is much worse than when it perceives a greater Weight, and there really is so.

EXPLANATION.

The Reason is, because if a Person feels a Heaviness, when there is not in Reality any increase of Weight ; 'tis a certain Indication that he is under some want of Spirits, for a Diminution of Strength or Vigour will produce the same Sense as an actual increase of Weight : Where therefore there is not any such Increase of Weight, and such a Sense arises ; 'tis a certain Sign the Body is declining into a distemper'd State, and consequently in a much worse Condition than when sensible of a real Weight ; because a due stock of Spirits and Vigour may find some way or other to disengage the Body from such an Incumbrance, and reduce it again to its natural Standard ; whereas when a Person feels a Burthen upon him only by the decay of Spirits, it is a Task of much more Difficulty, (when the Stomach and all the Solids principally concerned in the Offices of Digestion, must needs be enfeebled and very weak) to repair such a Loss, and will require a considerable time to bring it about, if the prescribed Means succeed. From these Considerations also it appears further that,

A P H. XXIX.

Weight, with relation to the Perception of it in a living Body, is *Equivocal* ; because it is consistent, that at the same time a Body may actually be heavier, and yet seem lighter ; and on the contrary it may be render'd lighter than usual, and yet at the same time feel heavier.

EXPLANATION.

So that when a Body is said to be heavier or lighter than before ; 'tis to be understood with regard to the greater or lesser Sense a Person has at that time of a Weight upon him. And in this sense one Person may be said to be heavier than another of twice his *Absolute* Weight ; and thus People frequently express themselves upon several Indispositions, that they have a Heaviness upon them, although at the same time perhaps they are actually lighter, but only through a decay of Spirits and Strength are not so able as before

before to support their usual Bulk, and therefore they have then a sense of a greater Weight. This Weight may be called *Relative*, and that by which a Person is said to weigh so many Pounds exactly, without any regard to the Perception the Person has himself, may be termed *Absolute* Weight; and care must be taken to observe this Distinction in several of these *Aphorisms*, otherwise their Sense will be mistaken.

A P H. XXX.

Where both these concur, that a Person perceives himself lighter than usual, and that at the same time there is no increase in his *Absolute* Weight, 'tis a certain Indication of Health.

E X P L A N A T I O N.

Because such a Perception can arise from nothing else than a plentiful Invigoration of the Solids by a good stock of Spirits, which likewise depends upon a perfect Digestion, and a regular Discharge of all the Animal Functions, and therefore nothing can be a more certain sign of Health, unless it be in *Maniaicks* and *Delirious* Persons.

A P H. XXXI.

That Body which falls into a Standard of Weight below that of a State of Health, is in a worse Condition than that which rises above it.

E X P L A N A T I O N.

Because it is very difficult upon any Wast or Decay of the Substance of the Body, to restore it again by Supplies of a well digested Nourishment; the Methods of doing it, at a time that the Solids are weak and enervated, which they must needs be upon such Decays, being both very difficult and uncertain, and what requires also a great length of Time. Whereas to reduce it from too great an Increase, there are several Evacuations which are speedy and effectual, and attended with no great Hazards: To which if Abstinence,

stinance, moderate Exercise, and Temperance in the use of all the *Non-naturals* are added, they cannot easily fail of Success.

A P H. XXXII.

When a Body sinks below its healthful Standard, it immediately grows weaker: Which does not happen when it becomes lighter upon Sleep after a good Digestion.

EXPLANATION:

The Body cannot fall below its healthful Standard by violent Exercise or obstinate Fastings, without losing from the very Substance of the Solids more than can be suddenly repair'd, and therefore must of Consequence thereby be render'd much Weaker. But it is quite otherwise when the Body becomes lighter after Sleep, because that is occasion'd only by the Wast which has been before made of such a Matter, as after divers Circulations is found of no further service, and broke so small as to fly off insensibly through the Cutaneous Passages, and it is a great Benefit to the Constitution that it does so go away. What is lost likewise by the former means, is by over-straining the Springs of the Solids, and wearing the Orifices of the Excretory Glands too wide, both by the Grossness and additional Impulse of the circulating Fluids: Whereas by the latter, what goes away, is only a very fine thoroughly digested Matter, which rises through the Skin like a Vapour or Steam, without any manner of Difficulty or Disturbance to the Body.

A P H. XXXIII.

If without the force of Exercise the Weight decreases, and the Strength decays, it is because there is not a supply of Nourishment in Proportion sufficient to recruit what is wasted.

EXPLANATION.

From the necessary Actions of the Muscles in the Performance only of the Vital Functions, both the Vessels will be

be so much wore away themselves by the Attritions of their circulating Juices, and some parts of the Juices so much broke, as to make it necessary that there should be a continual supply; which, if it be not answerable to such a Loss, there cannot but follow a Defection both in the Weight and Strength of the Body.

A P H. XXXIV.

There are but three ways only by which a Body can grow weaker; the one is when its Bulk increases, without any Decay of Spirits: Another when the Spirits sink, and the Body keeps to its usual Standard; and the other when both Spirits and Bulk decay together.

EXPLANATION.

The whole of this appears from what has been said before, *Explan. Aphor. XXVIII.* The Weight of the Body is always to be taken *Relatively*, and therefore in what State soever the Spirits bear less Proportion to the present Weight than before, the Body is properly said thereby to become heavier: And 'tis to be understood with regard to the same Distinction, when 'tis said to be weaker.

A P H. XXXV.

That Weakness which is felt when the Body decays both in Strength and Bulk, is the most dangerous: Because the Bulk is very conducive to its Vigour.

EXPLANATION.

The former Part appears from *Aphor. XXIX, XXX, XXXI* above; and the latter is confirmed by the following:

A P H. XXXVI.

The Weight or Bulk of the Body adds considerably to its Strength, either in drawing, carrying, turning, or striking.

EXPLANATION.

The Truth of this appears from the following Proposition, demonstrated by *Borrelli, de vi Percussionis*, That the Force of any moving Body is in Proportion to its Velocity, and the Quantity of Matter it contains : So that notwithstanding a Person of a small Bulk, may with Respect to his Stock of Spirit and Vigour be said to be very strong ; yet one of a larger Size, although not invigorated with a like Quantity of Spirit in Proportion to his Bulk will be absolutely much stronger ; especially in the Exercises above mention'd, where the Force of *Percussion* depends so much upon the Bulk of the moving Body ; See *Aphor. XCIII.* below, in this Section, and for this Reason frequently,

A P H. XXXVII.

The Strength of an old Man is owing more to the Bulk of his Body, than his Stock of Spirits : An old Person of a small Size may live long, but can never have much Strength.

A P H. XXXVIII.

If a Body returns to its wonted Standard upon Sleep, without any Sense of Uneasiness afterwards, it is good ; because it is a Sign of a Perfect Digestion ; but if otherwise, it is bad.

EXPLANATION.

Because what is insensibly gone off in Sleep, and by which the Weight of the Body is lessen'd, is only such a Matter as is thoroughly digested, and it is a Relief and Benefit to Nature to get rid of it ; and that nothing else goes off with it in Sleep, appears, when there is no Uneasiness follows it : But when any Part of the Nutritious Juices passes along with it, notwithstanding the Body is render'd thereby lighter, yet Inconveniences will ensue.

A P H. XXXIX.

The Body is not presently thrown into a Disease by an external Injury, unless some of the *Viscera* be first disposed to receive its Impressions, which Predisposition may be known by a greater or lesser Weight than is customary, and that not without some considerable Uneasiness.

EXPLANATION.

Where all the Parts are equally sound and strong, any slight Disorders from without are easily remedied; but where any Part is weaker than the rest, either from hereditary Causes, or the Injuries of former Distempers, the least Indisposition affects it, and without timely Care will bring the whole *Oeconomy* into Disorder. And when any particular Part is thus indispos'd, 'tis impossible but the least Irregularity of Accident will so much disorder it, as to hinder its right Performance of its proper Office, which according to its Importance in the *Oeconomy*, sooner or later affects the whole Body, so far as to be discernable either by an Increase or Diminution of some of the Secretions.

A P H. XL.

Whensoever Nature is disturbed in the Business of Perspiration, she soon begins to be defective in many more of the Animal Functions.

EXPLANATION.

Of so great Importance is a right Discharge by Perspiration, both as to its Quantity and the Matter of it, that the whole Constitution immediately suffers by the want of it; which cannot be strange to one who considers, what large Quantities go off by it.

A P H. XLI.

When the Head is afflicted with Pain, the Body soon begins to perspire less, and grows heavier.

EXPLANATION.

The Motions of all the Solids depend so much upon a due Constitution of the *Brain* and its *Meninges* ; That 'tis impossible one should be affected without the others being brought into Disorder thereby ; and Perspiration being owing to the just and regular Motions of the Fluids, and those to the due Impulses of the Solids, 'tis unavoidable but that when the Head is out of order, Perspiration must be so too ; and that when one is in Pain, the other must be lessen'd in its Quantity, and consequently the whole Body become heavier : The Reason of which will further appear under *Aphor. XLIX.* in this *Section.*

A P H. XLII.

The first Impressions of a Disease are much more easily discernable from the Changes of an unusual Perspiration, than from the Disorders of any of the other Functions.

EXPLANATION.

Because, as has been already said, so much depends upon a Right Perspiration, that it cannot be disorder'd, but the whole Constitution must suffer ; and nothing can more certainly be known, than the Quantities of it may be by weighing.

A P H. XLIII.

If upon weighing ; the Perspirable Matter appears to have been obstructed, and there is neither Increase of Sweat or Urine for some Days after, there is a great deal of Danger of a Putrefaction of the detained Crudities.

EXPLANATION.

The Solids will be so much oppressed by the superfluous Load which is laid upon them by the Retention of the Perspirable Matter, that unless there soon be a Discharge made

made of it by some of the sensible Evacuations, they will not be able to circulate it with so much swiftness as is necessary to prevent its falling into preternatural Ferments, there being nothing which more promotes that Intestine Motion of Liquors that disposes them to Putrefaction, than Stagnation. For then their several Parts are left at Liberty to sink or rise according to their several Gravities, and obey their respective *Attractive Powers*; upon which several are broke smaller, and others run into Corpuscles of different Kinds and Properties; whereas so long as they are kept in a Circulatory Motion by external Causes, they are not at Liberty to obey their *Attractive Powers*, or their several Gravities, but move on without any other Alterations, than what they receive from their casual Occursions and Attritions against one another; the Consequences of which is only breaking them smaller, and rendring the Liquor more Fluid. From all which it appears, that the different Fluidities of the Animal Liquors, are in the different Parts of the Body always, as their Velocities in each Part.

A P H. XLIV.

But if upon weighing, it appears that a greater Quantity of the Perspirable Matter has been carried off than usual by any Violent Cause, it may be concluded that in the Room of such a Wast, there soon will be supply'd an undigested Matter, which will be apt to obstruct the secretory Passages.

E X P L A N A T I O N.

The great Quantities which sometimes fly off by Violent Exercise, or any other Cause, cannot but leave those Fibres they last parted from, with too small a share of Moisture; by which as soon as a supply is taken in by a fresh Meal, the new Juices press forward into those Parts, faster than they can be digested, and are thereby apt to stick in the small Extremities, and obstruct the Passages of the succeeding. Hence may be collected several good Observations with Regard to the Preservation of Health. As after long Distempers which have wasted much the Substance of the Body, untill that Loss is thoroughly repair'd, to live with a great deal of Temperance, feed sparingly, and of what is

easy to digest : To observe the same likewise after long Fasting, or after any Violent Exercise, or upon Travelling from Hot into Cold Climates : Because in all these Cases there is such a great Waste of Perspirable Matter, and the Fibres are so much robb'd of their proper Moistures, that too large a supply of Food at once, as soon as it gets into the Vessels, for want of its usual Resistances, would be press'd on too fast, and fill the smaller Branches with Crudities.

A P H. XLV.

If what is thus lodged in the secretory Passages, can be rendered Fluxile and Perspirable, 'tis well ; otherwise the obstructed Part will first grow hard, and by degrees Schirrous.

E X P L A N A T I O N.

When an Obstruction of the perspirable Matter happens to be only in some Particular Part, if it is not quickly removed, by the continual Accession of succeeding Matter to the same Part, there must necessarily be raised a Tumour ; which, if it so happens to be situated as to hinder much the Passage of the Blood through the small Arterial Branches, will increase with Pain and Inflammation : And if the Blood is quite stopp'd in any of the Vessels, it will impostumate. But if the first Collection of Perspirable Matter happens so to lodge it self as not considerably to disturb the Bloods Motion, it may continue a long time, until the thinner Parts of it are perspired, and the rest reduced to a hard knotty Substance. The best Remedies in such Cases are at first keeping the Distemper'd Part warm, Abstinence, or a very sparing Diet, and of such Food as is easily Perspirable, moderate Exercise, and a Diversion by other Evacuations.

A P H. XLVI.

If the obstructed Matter can neither be removed by Nature, nor a Feverish Heat ; there is immediate Danger of a Malignant Fever.

EXPLANATION.

In this is to be understood not a partial but universal Obstruction of Perspiration, which if it is not immediately remov'd, cannot but produce a Fever. By Natures removing it, can be understood no other, than the overcharge occasioned thereby being thrown off by an Increase of some of the sensible Evacuations, which we very often find to be done, and a Fever thereby prevented; but when it does not happen so, a Fever will arise for these Reasons; *First*, an Obstruction of the Perspirable Matter cannot but Increase the Quantity of the Blood, because it is derived from it, and by its Obstruction preventing its further Derivation, whilst any Supply is made either by Eating or Drinking, the Blood must increase. *Secondly*, The Increase of the Bloods Quantity, will increase its Pressure against the Sides of the Arteries, and consequently make that Stroke which is felt by the Finger when apply'd to one of them, stronger. *Thirdly*, The increased Quantity of Blood will likewise occasion an Increase of the Fluid Secretions, in a Proportion greater than the Thicker; which see demonstrated by Dr. Cheyne, in his *new Theory of Fevers*; and Dr. Wainwright in *Propos. 18. of Animal Secretion*. By this the Secretion of the *Succus Nervosus* in the Brain will be increased, and thereby the Vibrations of the Solids become quicker and stronger. *Fourthly*, The Quickned Vibrations of the Solids will increase the Velocity of the Blood, and break its Parts smaller, which consequently makes it take up more Room, because the Surfaces of Bodies, upon their Division, do not so fast decrease as their Solidities; these being in a *Triplicate*, but those only in a *Duplicate* Proportion to their Diameters; That is, the Surfaces of the divided Parts taken together, are much greater in Proportion to the Matter contained under them, than the Surfaces of the same Quantity of Matter, when not broke into so many Parts; so that the further the Division of any Body is carried, the more Space will that Body thereby take up: And upon this Account also will the Arteries be more dilated, and the Pulse raised, which is what every one calls a *Fever*; and after this manner Things go on, either until the Obstruction is removed, or the Overcharge carried off by an Increase of some Sensible Evacuation, or

C 4

thrown

thrown aside in an Abscess upon some particular Part ; and thereby the *Equilibrium* between the Contraction of the Solids, and the Resistances of the Fluids again restored ; or else until the Solids are wore out, and have quite lost their Springs ; and unable longer to continue their Motions subside, the Fluids stagnate, and Death ensues. At the first Attack therefore of acute Fevers, the principal Thing to be done, is either to promote immediately that Evacuation which has been obstructed, or if that cannot be done, some other ; whereby an Increase of the Quantity of Blood, and consequently an Acceleration of its Motion, may be prevented, and all its threatening Attendants put out of Danger.

A P H. XLVII.

Feverish Persons are as much in Danger, when Perspiration is hinder'd by an unskilful Administration of Medicines, as by their own Errors.

EXPLANATION.

A wise Physician therefore will be very wary in the Beginning of a Fever, and not too buisie with Medicine, until he finds what Course Nature her self takes to throw off the Distemper; and then his prudent Assistance is necessary, and may enable the Patient to get over a Distemper, which otherwise he might sink under.

A P H. XLVIII.

A moderate Dose of *Cassia* does not divert Perspiration, nor impair the Strength, but only rids the Body of a Superfluous Load ; But other Purges empty too much, and reach the Parts more remote, and carry off too great a Quantity ; for the following Food will press so hastily into the emptied Passages, that the Bowels and Bladder will be defrauded of their due Moistures, whereby the Body afterwards frequently grows heavier.

E X P L A N A T I O N.

The Consequences of too strong Catharticks, as to filling the Body with Crudities afterwards, will be the same, as from too large a Perspiration, and for the same Reason, which see in *Explanation to Aphorism XLIV.* And besides the Inconveniencies of emptying the Vessels too much, as all increased Evacuations do, strong Purgatives have further this ill Effect, as they stimulate the Solids much, they both occasion thereby a greater Wast of the nervous Juices, and at the same time contract them so as to hinder Perspiration, which makes the Body heavier.

A P H. XLIX.

All Pain, or Hard Labour lessens the Quantity that goes off by Perspiration.

E X P L A N A T I O N.

That true and natural Perspiration, which is beneficial and necessary to the Constitution, requires such a peculiar Texture of the cutaneous Passages, that if they are too large, a great deal besides truly digested Matter will fly off, and weaken the Body; and if they are too much straightened, there will not be sufficient Room for that which ought to pass: Now every thing which puts any Stress upon the Nerves, straightens the Excretory Pores, which are formed by the manifold Convolution of their Extremities: For the whole nervous System is like a Piece of Net-Work, where one Thread is so weaved with another, that if one Extremity is pulled, the Motion will be continued through the whole. When therefore any one Part of the Body is afflicted with acute Pain, the whole becomes so much affected by it, that the Nerves will every where be drawn straighter, and thereby the Excretory Passages lessen'd, and consequently a less Discharge of the Perspirable Matter made at that Time, than is usual and needful. Hard Labour likewise or any Violent Exercise has the same Effect as Pain, and for the same Reason, with this Difference only, That Exercise, by the Actions and Attritions of the Muscles, as it straightens the Passages, so it also at the same time,

time, breaks the Perspirable Matter smaller, and renders it thereby more passable ; which Pain does not without a Fever.

A P H. L.

Any external Cold, though never so small, in the time of Sleep, hinders Perspiration.

EXPLANATION.

Sleep is so necessary for a right Perspiration, as appears from what has been said under *Aphor. XX.* That if it be disturbed at that Time, the ill Effects of it are the more discernable ; and that easie Relaxation the Nerves are under during Sleep, makes them more sensible of external Cold, which acting upon them as a *Stimulus*, contracts them, straightens the cutaneous Pores and so hinders Transpiration. Indeed the whole Business of Sleep, as to its Service in the *Animal Oeconomy*, seems to be nothing else but to favour the Admission of fresh Supplies of Spirits to the Nerves, and the letting out what is become useless by Transpiration, neither of which can so well be perform'd in a State of Contraction, which they always are in when awake : As soon therefore as the old Stock is gone off, and they are supply'd with fresh Juices from the Blood, by the Secretion made in the Brain, there seems to be no further need of Sleep, nor is it possible, almost to continue it longer without the Help of Medicines. Hence may be deduc'd the Reasons, why sleeping soon after a Meal, inclines People to be fat and corpulent ; which is, because letting the Nerves into such a relaxed State upon a full Stomach, gives Liberty to a greater Derivation of nutritious Juices into the Habit of the Body, than Nature requires, and that too before the Supply of a former Meal has finished its Circulations, and is broke small enough to pass off through its proper Outlets, and make room for a new one.

A P H. LI.

One of the most common Hindrances of Perspiration in Summer Time, is frequent Tossing about in Bed.

EXPLANATION.

Because such restless Motions prevent that Relaxation which quiet Sleep indulges, and is necessary for a due Perspiration.

A P H. LII.

There are Three Internal Causes which hinder Perspiration ; Natures being employ'd another way, Diversion, and a Decay of Spirits.

EXPLANATION.

By Natures being employ'd another way must be understood, either by some stress laid upon some particular Part, as in Pain, or upon a full Stomach, which contracts the Nerves, and hinders Perspiration as above-mention'd ; or by an Increase of the Sensible Discharges, which has the same Effect, by diverting the Matter off it another way, and cutting off its Supplies. The Term in its self is very obscure, although frequently made use of. By Diversion is the Enlargement of some other Evacuation. A Decay of Spirits from what Cause soever, cannot but lessen Perspiration, because the Invigoration and Force of the Solids, upon which Perspiration necessarily depends, is by that means destroyed : For the Elasticity of the Fibres arises from a due supply of a convenient Fluid, which we commonly call *Animal Spirits*, of which whensoever they are defrauded, they become unfit for Motion.

A P H. LIII.

To this Purpose it appears upon weighing, that during the Operation of a Medicine, and after Repast for the space of three Hours together, there is but very little Perspiration :
For

For in the Operation of a Medicine Nature is employ'd in the Sensible Evacuations ; and after Eating, in Digestion.

EXPLANATION.

In this again the Proposition is true and easily demonstrable ; but the Reason for it given, none at all. The Word *Nature* here being so general and complex, that no distinct Idea can be fixed to it, and instead of giving any Notion of a *Mechanical Procedure*, which in such Matters always ought to be kept up to, it leaves the Reader altogether in Obscurity ; it has been observed before, that the Encrease of one Evacuation must lessen another ; and the Reason is both because by how much more one abounds, by so much the less Matter will there be to supply the other ; and because the same Fluid cannot move in different Directions at the same time. For all the Animal Juices may be look'd upon in this Case, as a contiguous Collection of any Fluid in any compressible Vessel, with Out-lets of different Diameters in several Parts of it ; wherein 'tis well known that an equal and uniform Pressure on all Sides, will force out the Fluid through all its Out-lets, and that both its Quantity and Velocity will be determined by the Diameter of each Orifice ; That if the Diameters of the Orifices are on all Sides shortned at once, and the Pressure remains the same ; the Quantities forced out will be lessen'd, and their Velocities increased : That if their Diameters are lengthned *contra* ; that if one Orifice is only straightned, the Velocities and Quantities passing at the other, will be increased : And consequently that if it be made wider, the Quantities discharged by the rest, decreased. All which may be demonstrated by a Bladder full of Water prick'd with several Holes ; by which familiar Experiment 'tis very easie to conceive, how one Evacuation by its Increase necessarily lessens another ; as likewise how its Decrease must promote some other, so long as the same Quantity of Fluid remains ; and the same compressive Force of the Solids. When therefore either the Discharges by Stool or Urine are larger than usual, 'tis no wonder that Perspiration is less. That a full Stomach should also hinder it ; it is because during that additional Weight, the Nerves are drawn straighter, and their Excretory Passages made less, and there-

therefore until Digestion is perfected in the first Passages, that is until the Load is removed out of the Stomach, and more equally distributed, so as not so much to be perceived as a Weight; until all this, I say, is done the Perspirable Matter, for the Reason before given, must very much be obstructed. This *Explanation* proves the following,

A P H. LIV.

In a Looseness and Vomiting, Perspiration is hindered, because the Matter is diverted another way.

A P H. LV.

Too thick Apparel hinders Perspiration, by wasting the Spirits.

EXPLANATION.

That is, by Supleing and Relaxing the Fibres too much, they lose that Firmness which is necessary to a good Digestion. There can hardly therefore be any greater Error committed, than for weak People to load themselves with Garments, which is very customary; and to do it, as they say, to avoid catching Cold, is the only way to expose themselves to be disorder'd thereby. Whatsoever means are used, there can never be obtain'd a firm lasting Health, although in the best Constitution too in the World, as long as this is practis'd; although indeed where any have had the Misfortune to be thus ill advised, it is by no means to be left off at once, but gradually to be brought about. And then in hot Seasons, when Bathings sometimes should be used in Cold Water, in order to harden the Fibres, and give a Firmness to the Body, against the Approaches of the following Winter. Moderate Exercise is also very serviceable to this Purpose, as it helps to break the Perspirable Matter smaller, and thereby render it more capable of passing through straighter Pores. The many ill Consequences of keeping the Body too tender, may be met with in several late Writers, as likewise the vast Advantages which arise from a cold hardy Regimen; See Sir John Floyer of Cold Bathing, with Dr. Baynard's Letters; Mr. Fuller's *Medicina Gymnastica*, and *Wainwright of the Non-naturals*.

A P H. LVI.

The Body does not perspire at all times alike, for in the first five Hours after Eating, there wafts about a Pound; the next seven Hours, about three Pound; and from the twelfth to the sixteenth (at which Time there will be need of a fresh Supply) hardly half a Pound.

EXPLANATION.

For the Reason why the least Quantity goes off by Perspiration, in the hours after Eating, See *Explanat. Aph. LIII.* above. After Digestion is perfected in the Stomach and Guts, which commonly happens in four or five Hours time, Perspiration is the largest, because the Supply of the last Meal for the greatest Part lyes then ready for Expulsion, which after a few Hours again decreases, and makes it necessary to recruit by a fresh Meal.

A P H. LVII.

They who feed or purge in the Hours, when they should most perspire, which are those in the Morning, are very much the worse for it, because thereby they hinder Perspiration.

EXPLANATION.

How both Feeding and Purging hinder Perspiration, appears from *Explanat. to Aphor. LIII.* above. They therefore who consider of what Consequence a due Perspiration is, will be wary how they disturb it.

A P H. LVIII.

Imperceptible Perspiration lightens the Body more than all the Sensible Evacuations together; for after Sleep every one may perceive himself lighter, without any of the Sensible Secretions, because he really is so, by about three Pound. See *Aphor. IV, V, VI. Sect. I.*

A P H. LIX.

Sixteen Ounces of Urine is generally evacuated in the space of one Night ; four Ounces by Stool, and forty Ounces and upwards by Perspiration.

A P H. LX.

There is as much carried off by Insensible Perspiration in the Space of a natural Day, as by Stool in the Course of five Days.

EXPLANATION.

It appears from the three preceding *Aphorisms*, that the Quantity wasted by Insensible Perspiration in the Space of a Day, is double the Quantity of all the other Evacuati-
ons together, and ten times as much as goes off by Stool in the same Time : Whence may be collected the vast Advantages and Disadvantages that may arise from this Discharge. In Case of a *Plethora* and too great a Fullness, either by a Debauch or by taking Cold, where it has gone so far as to destroy the due Constitution of the Fluids, and is to be remedied by simple Evacuation, nothing can be so effectual as to do it this way, both as to answer the End with certainty, and little Hazard, where it can conveniently be procured. Discharge by Urine or Stool cannot be had in any considerable Quantities, but by such Means as irritate and disorder much the Solids, and occasion such great Derivations of the *Liquidum Nervosum* into the Bowels and Parts stimulated, that the Muscles are not able to sustain their proper Offices, but grow languid and faint, and so draw away the Blood its self by *Phlebotomy*, the Consequences are uncertain, all the Secretions both as to their Quantities and Qualities being liable to be altered thereby, the remaining *Mass* by having more Room being subject to generate new Cohesions, and coalesce into Corpuscles of a new Sort ; whether for the better or worse no Body can tell. The drawing it off likewise in any large Quantity at once, so much affects and alters the Contractive or Elastick Powers of the Vessels, as to produce

duce *Syncope's*, and occasion very great Disorders ; for an Account of which at large, See *Bellini de Missione Sanguinis*. But to evacuate by insensible Perspiration is attended with none of those Difficulties, that being effected only by easie and steady Contractions of the Solids, and preventing that at the same time there be any Pains or Uneasinesses which may straighten the Secretory Passages, or too great a Degree of external Cold : And as the ill Consequences of a *Plethora* are advanced, so the means to increase the Contractions of the Solids, and keep open the cutaneous Passages are to be intended or remitted ; at sometimes an Increase only of external Warmth by Cloaths are sufficient, but at others perhaps there may be needful very warm Stimulating Medicines, such as are commonly call'd *Diaphoreticks* ; and of Vomiting likewise, if nothing forbids, which wonderfully assists this Evacuation, by the Exercise it gives to all the Muscles, and breaking thereby the Cohesions of the Fluids, and rendring them small enough to get out at the Surface of the Body. But the Advantages of this Evacuation in several Cases more particularly appears, when we come to consider, what great Quantities are drawn off this way, to what may be done by any of the other Discharges ; and how it more immediately relieves the distended Vessels ; but hence also will appear the Danger of doing any thing to promote this Evacuation beyond measure, in any wasting Consumptive Cases : For if ten times as much goes off this way as by Stool, then ten times as much discharged by Stool than what is usual, will weaken a Person no more than but doubling the Quantity perspired ; nay, if we take into Consideration, that the Perspirable Matter is more immediately derived from the Blood, and never can be much increased, but that it will carry off with it a great deal of the nutritious and useful Juices ; and that what is voided by Stool is nothing but the useless Parts of our Food, the Difference will appear much greater, and make the Loss sustain'd by a doubled Perspiration, as great as that which is occasion'd by a Discharge of near twenty times as much as is usual by Stool.

A P H. LXI.

What must then be thought of those Physicians, who in all manner of Distempers, have Regard only to what is evacuated by Stool and Urine, and never take any notice of the Discharges by Insensible Perspiration.

A P H. LXII.

When Perspiration is during the Night, larger than usual, but without Sweat and Uneasiness, it is a sure Sign of perfect Health.

EXPLANATION.

There are none of the Evacuations that the same can be said of besides : For an increase in any of them is always either critical of some Distemper, or else brings one. But this only by a fuller Meal, or Drinking more than ordinary, or after Watching longer than usual, in good Constitutions is frequently increased, and so far from being attended with any ill Consequences, that the Body is much benefitted thereby, and receives a greater stock of Spirits and Vigour. But it is thus only where there is a perfect state of Health.

A P H. LXIII.

The Body is then most free from a Distemper, when it is in the Mean of a Healthful Standard, not by any Spontaneous or Medical Evacuations, or by Abstinence, but by the Means only of such insensible Perspiration, as goes off in Sleep, after a perfect Digestion.

EXPLANATION.

It is not to be supposed, that a Body cannot gain or lose a little of its Weight without falling into a Distemper; therefore all that Latitude of Alteration a Body is capable of undergoing with respect to its Weight, without being distemper'd, is call'd by *Sanctorious* here, and in several Places of his *Aphorisms*, a *Healthful Standard*; the greatest Weight it is capable of, is its greatest *Healthful Standard*, and its least, the *lowest Standard*, and between both, its *mean* or *middle Healthful Standard*; and all these are different, at different Ages and Seasons, as will hereafter further appear.

A P H. LXIV.

How much is necessary for every one to perspire, in order to preserve a State of perfect Health may be thus known. Take notice in a Morning, following a plentiful Supper, of the greatest Quantity that perspires in the space of twelve Hours: Suppose it be fifty Ounces: Some other Morning observe the same, after eating no Supper, (and provided there was no Excess in the former Days Dinner) which suppose to be twenty Ounces: Then chuse such a settled Quantity of Food, and keep to such a use of the Non-naturals, as will bring the Quantity perspired to a Mean between fifty and twenty Ounces, which is thirty five Ounces; and by this means may a Person be brought to such a perfect Standard of Health as may last to a Hundred Years.

EXPLANATION.

This I believe will be thought too troublesome ever to be put in Practice; and if it should, it would be no certain Rule, because some Meats go off much more by Perspiration than others, as we shall find hereafter in the *Third Section*: So that to keep rigidly to the same Quantity in all

all Meats, would sometimes underdoe, and at others overcharge the Body ; according as they are more or less perspirable, or nourishing. And for a Person to go thorough the Experiment, with all the Kinds of his Food, to find the several Quantities necessary to keep this Standard, would be a Task, that very few would care for, as hardly to be rewarded by the largest Enjoyments of this Life.

A P H. LXV.

Even those Men who are in a perfect state of Health, and observe the utmost Moderation in Living ; once a Month increase beyond their usual Weight, to the Quantity of one or two Pounds ; and at the Months end return again to their usual Standard, in the same manner as Women do ; but then by a critical Discharge of Urine, it being either increased in its Quantity, or more turbid.

A P H. LXVI.

Before the aforesaid Crisis happens, there is felt a Heaviness in the Head, and a Lassitude all over the Body, which Symptoms are afterwards removed.

EXPLANATION.

The Contents of these two *Aphorisms*, are of the greatest Importance to be thoroughly acquainted with, notwithstanding which they are seldom talk'd of, and less understood. That Women undergoe such Changes is taken notice of by every one : But they only who truly understand the Reasons of it, are also apprised of the like Alterations in Men. The Histories of Diseases frequently take notice of Distempers returning at certain Periods and Ages of the Moon ; and some of them such, as plainly have their immediate Rise from a *Plethora* or too great a Fulness ; the Story of a *Periodical Hemorrhage* a Man had

at his Thumb, in the *Philosophical Transactions*, is very notorious, and almost every one, but indifferently conversant in Physical Practice, must have one time or another met with Cases of the like nature; but nothing is more frequent than *Epileptick Symptoms* and Pains in the Head; of the latter I now know a very remarkable Instance, in one between thirty and forty Years of Age, who for some Years together has not miss'd one Month having a very sharp Fit of Head-ach attended with a small Fever; every Paroxysm is preceded by a Heaviness of the whole Body, a general Lassitude, a Decay of Appetite, and sometimes slight Rigors, and goes off generally by Sweat; if at any time a *Diarrhœa* has happened, especially a little before the Attack, it always prolongs the Intervals between the Fits. Bleeding also has done the same. All which very plainly proves a Periodical Increase of the Bulk of the Body, and that the Overcharge is thrown off by those short Fevers. But how such Increase is made, cannot be understood without knowing how the Animal Oeconomy, is affected by the external Air and its Changes, and how that too is influenc'd by the Revolutions of the Heavenly Bodies; but to enter into a *Rationale* of those Matters here, would be of too great a Length, I shall therefore only recommend the Reader for a full Satisfaction herein, to Mr. Boyle's *History of the Air*, where he will find its Elasticity, Condensation and Rarefaction demonstrated by uncontestable Experiments: As to the Causes and Consequences of its Gravitation upon the Fluids of the Globe, to the *Theory of the Tides*, as extracted from Sir Isaac Newton's *Philosophiæ Naturalis Principia Mathematica*, by Dr. Edmund Halley, printed in the *Philosophical Transactions*, and likewise in Dr. Harris's *Lexicon Technicum*; but above all, for a partiicular Application of this Theory to humane Bodies, consult Dr. Mead, *De Imperio Solis ac Lunæ in Corpora humana*; and Dr. Friend's *Emmenologia*, where these Matters are treated in a way truly Mechanical and Demonstrative.

A P H. LXVII.

The external Causes which are wont to hinder Perspiration, are the cold Air, and that which is damp and Foggy; swimming in cold Water, a too gross and viscid Food; an Intermission of usual Exercise, and Disuse of Venery.

EXPLANATION.

Cold Air and swimming in cold Water, may be so managed, as in some Circumstances and Constitutions to promote Perspiration; as 'tis very well known in cold Bathing, and likewise that robust athletick Bodies perspire most in a cold clear Air. It is therefore here to be understood, by exposing the Body beyond what is usual to the Air, and staying too long in cold Water, and going into it at improper Seasons, and without due Perspiration. A damp foggy Air cannot but be prejudicial to Perspiration, for a great many Reasons; its Elasticity being much weaken'd, those Particles which mix with the Blood will not be able sufficiently to elevate and distend its Globules, upon which they run into closer Contacts with one another, and occasion stronger Cohæsions, than are agreeable to the Purposes that Fluid is design'd for, and render it too siezy to part with a sufficient Quantity for Perspiration. It relaxes also and supples the Fibres of the Body, and hangs so much upon the cutaneous Pores, that the weakned Contractions of the Vessels are not able to carry on the Fluids with force enough to break thorough those Obstructions. Too Viscid a Food has the same Effect, by rendring the Juices too thick for Perspiration; as also has an Intermission of usual Exercise, because thereby the Blood wants those Motions and Attritions as are necessary to break it small enough to exhale thorough the Skin. The Consequences of an Excess or Disuse of Venery, we shall see below in the *Sixth Section*.

A P H. LXVIII.

External Cold hinders Perspiration in weak People, because their natural Heat is dissipated ; but in Robust, it increases it ; for thereby the Heat being drove to the Center, is doubled, and so Nature is strengthened, and by that means drives out the Quantity of Perspirable Matter that was retained, and makes the Body both seem and really become lighter.

EXPLANATION.

The Proposition here is very true, but the Reason for it hardly intelligible, although according to the usual way of talking in such Cases ; for the Term *Vital Heat* here conveys no determinate or distinct Notion of any thing at all ; and it is merely chimerical and dilusory, to say that Cold dissipates it in a Person that is weak, and drives it inwards in one who is strong, which then expands it self *quaqueversum*, with such force towards the Circumference, as to carry before it all Obstructions that lye in its way. And this Mistake, or Ambiguity at least, is owing to a want of a right Application to the proper Principles of Knowledge in such Matters, and by not keeping the Mind steady to that evident and demonstrative Procedure, by which all Physical Agents operate. And without knowing the *Mechanism* of the Solids, it is not very likely that a Person should ever understand much of the Natures and Properties of the Fluids, and amongst others, the real Causes of that Heat, which is more especially sensible in the Blood. That Heat then which is commonly called *Natural* or *Vital Heat*, is nothing else than a due Circulation of a peculiar Fluid, for nothing is more plain, than that its Increase and Decrease are always as the different Velocities of the Blood. If then the Velocity of the Blood is as the Force of the contracting Vessels, which is easie to be proved ; then the smarter and stronger those Vessels contract themselves, the greater will always be the *Vital Heat*,

Heat, and *è contra*. Now why Cold invigorates the Contractions and Vibrations of the Vessels in those who are strong, and weakens it in such as are tender, is because it both lays a greater Weight upon them, and acts likewise, as has been before mentioned, as a *Stimulus*: For whenever we have a greater Sense of Cold from the circumambient Air, the *Barometers* will prove the *Atmospherical Pressure* at that time to be increased; and that Water is still heavier, and presses more upon the immersed Body, is not to be disputed. A greater Pressure therefore upon the Vessels *ab extra*, especially when accompanied with a *Stimulus*, cannot but assist them in their Contractions, and carry on the faster the circulating Fluid, and consequently increase that Heat, which is a necessary Effect of such Motion; but if the Fibres which constitute those Vessels are weak, that is, have so much lost their Springs, as not to be able to return with a Quickness and Strength equal to that of their Contractions; then the Vessels will by any such Cause be only lessen'd in their Capacities, and the Blood by meeting with greater Resistances, be retarded in its Motion, and consequently the *Vital Heat* will be decreased. Now Perspiration, that is, the Quantity perspired, being *cæteris paribus* in Proportion always to the *Vital Heat*, (as here explain'd) it follows of Consequence, that whatsoever increases or diminishes the one, it will likewise have the same effect upon the other. When therefore by any external Cold, whether by the Air, or Bathing, the *Vital Heat* is increased, Perspiration will thereby be promoted; and when the Heat is lessen'd, Perspiration will be so too.

A P H. LXIX.

The Health of that Body is much more lasting and establish'd, whose Weight in the Course of several Years neither increases nor decreases, than that which is changed every Year.

EXPLANATION.

Frequent Variations of the Standard of Weight, cannot be so well as keeping to a settled one, because such Changes must needs in some measure disturb the Animal Functions, and put the Constitution into Disorder; by sometimes overcharging and straining its Springs, and at others by defrauding some of the Parts of their due Supplies.

A P H. LXX.

To return to the usual Standard by an Addition of indigested Juices, is bad: But by what is well digested, Healthful. See *Aphorism XLIV, XLV.* of this *Section.*

A P H. LXXI.

For a Person to lose of his Weight with the same way of Living, is bad: For in the Room of that healthful Substance which is wasted, there is made no Supply.

A P H. LXXII.

The Excrements of the Guts which are well digested are large in Bulk, but of small Weight, they swim because of the included Air, and what is ejected at once seldom exceeds the third of a Pound.

EXPLANATION.

That is, they are *specifically* very light, and of Consequence very porous, and full of Air, which makes them emerge, in Fluids of greater Specifick Gravities.

A P H. LXXIII.

If thorough any Error a Pound of Perspirable Matter is detained in one Day, Nature is generally three Days in Discharging it.

EXPLANATION.

Which is commonly found true by Experience ; for upon taking Cold, as it is usually called, which is nothing else but a lessened Perspiration, it is seldom less than three Days before the Inconveniencies arising from it are removed ; and by that time the Body either gets quite rid of them, or is seized with the usual Symptoms of an accute Fever, of which, unless immediately removed by some Evacuation that carries off the Overcharge, no Body can see the Consequences,

A P H. LXXIV.

A great deal is insensibly discharged, when Nature endeavours to get rid of the retained Perspirable Matter, by Yawning, and Stretching of the Limbs.

EXPLANATION.

These a Person is most inclined to just after Sleep, and the Reason is, because during Sleep, a greater Quantity going off by the Pores of the Skin, than at other times, whensoever a Person wakes, the increased Contraction that then happens, closes a great deal of the Perspirable Matter in the cutaneous Passages which will continually give such little Irritations, as excite Yawning and Stretching ; and such Motions by shaking the Membranes of the whole Body, and shifting the Contacts of their Fibres and the inclosed Matter, by degrees throw it off. Hence we see the Reason why healthful strong People are most inclined to such Motions, because they perspire most in time of Sleep.

Sleep, and therefore have more of the Perspirable Matter to lodge in the Pores, and greater Irritations thereunto.

I cannot easily pass by here, the vast Advantages of some little Exercises just after waking in the Morning. At that time by the Quantity which is gone off during Sleep, the Body is much emptied and lighten'd, and all the Fibres invigorated with a fresh Stock of Spirits ; that Firmness therefore and due Tension of the Solids, which are so necessary to a good State of Health, are then most easie to be obtain'd, because the Fibres at that time may most conveniently be drawn up and harden'd, by any such means as gently contracts them, and at the same time shakes off their grossest and most useles Moistures. Now that Exercise does contract the Solids, nothing is more manifest, and therefore nothing can be of greater Service than to use it at these times. But such is the best as gives a gentle Motion to all the Parts, especially the Membranes and cutaneous Fibres, and this can be effected no surer way that I know of, than by the *Flesh Brush* ; which ought to be used just before rising and putting on any Cloaths ; and if now and then the Person would leap about, and stretch his Arms on all Sides, with Weights in each hand, it would wonderfully assist those good Ends which are to be procured hereby. By this means all that Matter which is digested enough for Perspiration, would be drawn out, and the Solids have no manner of Weight left upon them but the necessary Fluids, by which they would be enabled to perform their respective Offices with Ease and Vigour, and as in a Clock or Watch new cleaned, the several Motions of the whole Machine would go on with greater Regularity. See *Aphor. XXXIV. Sect. IV.*

A P H. LXXVI.

The Perspirable Matter is of Two Sorts, a lighter and a heavier.

A P H. LXXVI.

The heavier Part coalesces together, in its going off, in such a manner as to produce Animals; such as Ticks, Lice and the like.

EXPLANATION.

That the thicker Part may lodge and adhere so much upon the Surface of the Body, as to afford such Creatures Nourishment, is not very unlikely; but that they are produced from this Matter without Animal Parents is a mistake, as is easie to prove. The most effectual way to keep clear of such Inhabitants, is to use the Methods prescribed in *Explanation to Aphorism XXXIV.*

A P H. LXXVII.

From the groffer Part proceeds contagious Diseases amongst such as lye together; for the lighter flies away, and the heavier Part gives the Infection.

EXPLANATION.

It is very likely to be thus in the Propagation of cutaneous Diseases, as the *Itch*, which perhaps may be infectious only by Contact and lying together, and may be occasioned by the heavier Part of the Perspirable Matter lodging upon the Skin. But 'tis likewise certain, that the Infection of some Diseases may be communicated by subtile Particles that fly off, and are efficacious at a very considerable Distance.

A P H. LXXVIII.

To those who have the Perspirable Matter obstructed in very hot Weather, 'tis very troublesome : But to those who freely perspire their due Quantity, the Heat is not uneasy;

EXPLANATION.

Because the obstructed Matter not only increases the Weight, but also at such Seasons is apt to raise preternatural Ferments, and occasion Putrefactions ; or at least to contract such Qualities during its Stagnation, as may render it irritating and troublesome ; all which Inconveniencies are prevented when the Perspirable Matter, as soon as made, flies off.

A P H. LXXIX.

The greatest healthful Standard the Body is capable of, differs from the least, as it more hastens old Age : Suppose one enjoys perfect Health at two hundred, equally with another of five Pounds more : The Excess of the latter, has been observed to hasten Old Age five times as fast.

EXPLANATION.

'Tis certain, that the greater Fulness there is, although not so great as immediately to bring on a Distemper, the sooner will the Solids lose their Springs, and wear out, having by that means more Labour to circulate and digest the Fluids, than where by a temperate and sparing way of living, a Person always keeps to the lowest healthful Standard.

A P H. LXXX.

Why does animated Flesh live, and not putrify and die? Because it is daily renewed. Why may Children live longer than old Persons? Because they may be oftner renewed, from the lowest Standard of Weight to the greatest: For they are capable of more Weights that are healthful. Why do most old People of necessity dye? Because they arrive to the only last healthful Standard that they are capable of. But why to the last only? Because their Fibres are grown hard, and such as possibly cannot be renewed; whence proceeds Death.

EXPLANATION.

The continual Motions that the Animal Fluids have impressed upon them by the contractile Vessels, prevents their falling into such intestine Motions of themselves as tend to Putrefaction; as we find it happens to all circulating Liquors. But as soon as this Motion ceases, which it must needs do when the Solids no longer continue their Impulses, as in Death, then as all Heterogeneous Fluids always will do, they will obey their natural Gravities and Attractions, under the Power, of which there is brought about such a Change in the Mass as is called Putrefaction. What is meant by different healthful Standards and their Changes, has been already explain'd, *Aphor. LXIII.* above. Old Persons die because their Solids are quite worn out, that is, they have so far lost their Textures, as not to admit any further Supplies of such Juices as are necessary to keep them in Motion. As when the Principal Wheels of a Clock are worn out, and they are capable no longer either of moving others, or being moved themselves, 'tis necessary that the whole Machine must stand still.

A P H. LXXXI.

Why do those who are seized with obstinate Distempers, recover? Because they are capable of enjoying Health under several Weights, some Persons have lost in a Distemper thirty Pounds, more or less according to the greater or lesser Repletion before, and as the Distemper has been more or less inflamed or protracted.

EXPLANATION.

The Reason here given is but a very obscure one; That the Body is capable of Increase or Wast is most certain, without bringing Death, but it sounds very odd to say that is the Reason why a sick Person does not dye. When a Person recovers from a Distemper, it is because the Cause of that Distemper is removed before any of the Principal Parts are broke, or worn out and stand still, but even before that is done, sometimes in Fevers, particularly by the Acceleration of the Motions of all the Parts there is so much Substance worn away, as to lighten the Body by a great many Pounds, and vastly diminish its apparent Bulk: And such Wast frequently happens where the Person recovers, and is more or less, according as the Disease is raised or continued.

APHORISMS added by the
AUTHOR.

A P H. LXXXII.

Old Persons by frequent spitting protract their Lives: For if what they spit was retained, it being incapable of Digestion, would hinder Perspiration; from whence would ensue Suffocation and Death.

EXPLANATION.

It would be incapable [of Digestion by such aged Persons, because their Solids have very much lost their Springs and Force of Contraction, upon which Digestion depends; and therefore it must needs lodge in great Quantities in the Air-Vessels and Parts about the Lungs, insomuch as if in time it is not thrown off and brought away by coughing and spitting, it will intirely destroy Respiration; whence Death. But if by accident in young People whose Lungs are sound, there happens to be any Obstruction of the Perspirable Matter there, we often find that it is brought to Digestion, and cleared away; and a due Perspiration of that Part again restored.

Sanctorius reckons the Quantity perspired by the Lungs and Parts leading from them, as 1 to 10. But Dr. *Lister* a great deal more; if then in old People, and others of weak and bad Digestion, such Discharge this way is hindered; 'tis necessary that it be brought away by Cough and Spitting, or else very great Injuries must ensue, if not Death. Hence may be collected the properest Methods of treating those who are thus Diseased, if there is not a *Mala Conformatio*, or an absolute Corruption of some of the Substance of the Lungs; which is first to bring away the obstructed Matter by Pectorals and such Means as have been found to discharge this way; and then so to harden
and

and restore the Constitution, that the Perspirable Matter may be better digested for the future, and carried off without any such Stoppage; but because the latter is not practicable with old People, who are much worn out; they must be contented only with the Benefit of the former.

A P H. LXXXIII.

Old Age may truly be reckoned a Distemper, but it may be long protracted if the Body perspires well.

A P H. LXXXIV.

Venery destroys those who are Ancient, as also an actual Coldness of the Body, immoderate Drinking, and Eating like young People, Passionate Anger, and too much Exercise.

EXPLANATION.

All these accelerate the Motions of the several Parts of the Animal Machine, more than the Weakned and decayed Springs of Old Age can admit of, without considerable Damage.

A P H. LXXXV.

Old People fail of reaching to a long decrepid Old Age, because of the Decay of their Excretory Organs: Whence they discharge not so much by Urine as they drink, and perspire less than usual; the only Remedy is to adjust, as near as can be, the Evacuations to the Quantities taken in.

EXPLANATION.

In very old People the Muscles and Solid Parts at the greatest Distances from the Heart and Brain decay first, because those two Principal Instruments of Motion themselves

selves grow too weak and languid to propel the proper Fluids into them, and invigorate them in order to the performance of their respective Functions; and therefore the proper Discharges by them are hindered, before the Stomach loses its Power of Digestion; the only Remedy, or rather Preventive, is a sparing light Diet, and promoting Evacuation sometimes by gentle Catharticks.

A P H. LXXXVI.

A total stoppage of Perspiration, not only of the Principal Parts, but also of the remotest, certainly brings Death: Of the Principal Parts, as the Brain, it produces an Apoplexy; in the Heart, Palpitation, in the Liver too much Blood, in the Womb Suffocation; and in the lower Parts, a Gangrene.

EXPLANATION.

The Disorders herein mentioned arise frequently without any Injury immediately in the Part it self, but from a general hinderance of Perspiration, and several other Causes, too long here to enter into. It is very plain; that *Sanctorius* was here in the dark, by not being acquainted with the Circulations of the Animal Fluids, and that Mechanism by which any particular Part may be Distemper'd from a foreign Cause.

A P H. LXXXVII.

The Suffocations of Women do not proceed from a Pressure of the Womb against the Diaphragm, but from an actual Coldness of a corrupted *Semen*.

EXPLANATION.

This is built upon a Mistake of a *Semen* in Women, which latter Discoveries in Anatomy have better informed us about. The Distemper here spoke of actually arises from some Irritations and Disorders of the Nerves in that Part, which by their Communication and Consent with others, carry the Malady further, as it happens in all Convulsive Cases.

A P H. LXXXVIII.

The Humours of Gouty People, even the most thick, are carried off only by Perspiration.

EXPLANATION:

Because when they are got so far into the extream Parts, they are not easily brought back into any other Emunctory.

A P H. LXXXIX.

Vomiting diverts Urine and Perspiration.

EXPLANATION.

Because it makes a Revulsion of the Humours, and diverts the usual supply of those Evacuations. But this is to be understood only of such Vomiting as arises from a Weakness and Disorder of the Stomach, by which it cannot retain its Food, but throws it up again before Digestion: For Vomiting may be so ordered in several Cases as to promote Perspiration, when it has before been obstructed. The Muscles and Fibres of the whole Body are concerned in its Operation, and shook with such Force, as to conduce very much in dislodging whatsoever has been retained, and fixed in the Excretory Passages, and this is the Reason why it is of such mighty Service in the beginning of a Fever from taking Cold; for if it be administered upon the first Attack, 'tis a great Chance but it breaks the increasing *Lentor* of the Juices, and expells their Overcharge by Perspiration and Sweat. Mr. Fuller therefore in his *Medicina Gymnastica*, with a great deal of Reason, places

places Vomiting amongst those Exercises of the greatest Efficacy.

A P H. XC.

Frequent turning in Bed, so as to exercise all the Muscles by it, weakens the Constitution, and lessens Digestion and Perspiration. The best Remedy is resolutely to keep in the same Posture.

EXPLANATION.

Such restless Motions keep the Nerves too contracted to admit of that due Perspiration, which is best performed in time of Sleep : Which must of necessity weaken the Body, by the Retention of a superfluous Load. But the Remedy mention'd, I am afraid, is hardly practicable.

A P H. XCI.

When the Knees are actually made warm, the Feet will become so too ; and such will sleep well, perspire plentifully ; but make less Urine.

EXPLANATION.

The circulating Blood will carry that warmth which is occasion'd in any particular Part by external means, to all other Parts of the Body, as well as the Feet ; and likewise slacken the Fibres, which by what has been said already, appears to be conducive both to Sleep and Perspiration ; but it lessens the Quantity usually discharged by Urine, because, as was said before, the Increase of one Perspiration necessarily lessens another, See *Aphor. LIII.* above, and therefore for the same Reason,

A P H. XCII.

A Looseness may be remov'd by increasing the Quantity which is to be perspired, as it often happens in Bathing.

EXPLANATION.

There appears to be a mighty consent between the *Intestines* and the *Outer Skin*, for we always find an increased Discharge by one, to lessen that of the other ; and nothing is more common than a Looseness upon checking Perspiration by external Cold, and therefore it must needs be a very likely way to remove a Looseness by increasing Perspiration, which warm Baths cannot fail to do.

A P H. XCIII.

As a Load-stone armed with much Steel, and as a larger Vessel of Wine, keeps its strength best ; so the most weighty Bodies better preserve themselves in a vigorous Health, than such as are sunk with Abstinence.

EXPLANATION.

It was taken notice of before *Aphor. XXXVI*, above, that the larger the Body is in Bulk, *ceteris paribus*, it is the stronger ; and consequently better preserved in a perfect Health, because the better able to resist external Injuries, and rightly to perform the Vital Functions.

As to the strength of a Body, the Author of the *New Theory of Fevers* has demonstrated in *Lemma III*, That It is in different Animals of the same Species, and at different Times in the same Animal, in a Triplicate Proportion of the Quantities of Blood. And it is certain that the strength of the same Animal at all times is as the force of all his Muscles taken together, which Force is as the Quantity of Blood, and its greater or lesser Viscidity : For *Bellini* in his Forty ninth Proposition, *De Missione Sanguinis*, has proved at large, that in an increased Quantity of Blood it may be so vitiated, as to impair the strength : Therefore in the above-cited Proposition the Blood is to be taken only in a healthful State ; for upon every Diminution of Perspiration, the Quantity of Blood will be increased, but then such increase of Blood is so far from adding to the strength of the Body that it lessens it, as *Sanctorius* frequently takes notice,

notice, and the Difference lies here ; an increased Quantity of healthful Blood gives a larger Stock of Animal Spirits to the Solids than it did before, by Dr. *Wanewright's Eighteenth Proposition of Animal Secretion*, before taken notice of ; and therefore adds to the strength of the Body : But an increased Quantity joined with an increased Viscidity, will lessen, in Proportion to that Viscidity, the small separable Parts of the Blood ; and consequently the Secretion of a thin Fluid to be performed in the Brain for the Invigoration of the Solids, will be thereby lessened, and the Strength impair'd.

A P H. XCIV.

They who Piss more than they Drink, little or nothing perspire.

EXPLANATION.

Because the Perspirable Matter is diverted by Urine. And this may give a Caution to such who are fond of the *Mineral Waters*, and such Courses as work much by Urine : For 'tis certain that Perspiration is thereby hinder'd, which upon too long Disuse may not be very easie to be restored to its natural State ; for in time, not only the Excretory Passages may for want of their usual Attritions and Impulses subside, but likewise be very much obstructed by too large an Overcharge of a mineral gross Matter ; which may prove very difficult to remedy : And considering Perspiration is the largest Discharge, and of the most Importance of all the Evacuations for the Preservation of Health, the greatest Care possible ought to be taken, that it be not interrupted without unavoidable Necessity.

A P H. XCV.

Why is Perspiration hinder'd in intermitting Fevers ? Because the peccant Humours are in the Circumference of the Body.

EXPLANATION.

What Cause soever disposes the Blood to be more Viscid than Natural, will likewise hinder Perspiration, by obstructing the cappillary Vessels and the cutaneous Passages; 'tis demonstrated by Dr. *Wainwright*, Propos. 16. of *Animal Secretion*, that such Glands whose compounding Arteries are most complicated, secern the most viscid Matter from the Blood. And by Dr. *James Keil*, on the same Subject, Prop. 2. 6. and 9. Pag. 34, 35. That Corpuscles, which are the slowest in uniting, have the weakest attractive Force, the least Solidity, and the most extended Surfaces; but when united they cohere the more strongly, compose the most viscid Fluids, and therefore make the most viscid Secretions, and are separated at the greatest Distances from the Heart, where the Sum of the Cavities of the Arteries is greatest, and the *Impetus* of the Blood smallest; wherefore in all preternatural Viscidities of the Blood, the extream Parts are mostly overcharged with it, and there it adheres until it occasions Rigours, and afterwards Fevers. Now nothing is more plain, than that the peccant Humours in intermitting Fevers, is the *Lentor* or too great Viscidity of the Blood; its Causes see in *Explanat. to Aphor. LXVII.* above. But how such a Disposition occasions intermitting Fevers and Agues, would be of too great a Length here to enter into; I shall refer the Reader to Dr. *Jones*, *De Febris Intermittentibus*; and for a full and Demonstrative Account to *Bellini de Febris*, Propos. 18, and 19.

A P H. XCVI.

In Dropsies the Water in the *Abdomen* does not pass away, because it is too gross and Sizely to perspire.

EXPLANATION.

Another Reason likewise may be owing to the ill Constitution of the Membranes inclosing it, which at such times must needs be flaccid and pulpy, and thereby less porous. Their Elasticity likewise being much lost, there
will

will be wanting those usual Vibrations which are absolutely necessary for Perspiration ; the tonic or vibrating Motions of the Membranes being to the included perspirable Matter, as the Motion of a Sieve to what is designed to be shook through it : And further, would it not be too tedious here, it might easily be proved, that the Membranes themselves without Motion, are not porous enough to admit thorough them the most subtile Steams whatsoever, and yet that when moved in such a manner as in a sound state of Health, by the continual shiftings of the Positions and Contacts of their constituent Fibres, there are Openings alternately made from one Part to another, large enough to let thorough a very gross Matter : Which cannot but evince the Necessity of promoting and maintaining those natural Vibrations of the Solids by proper Exercise.

A P H. XCVII.

A Collection of hot Humours in any Part ought to be treated with warm Digestives, in order to render it perspirable.

EXPLANATION.

Therefore Care ought to be taken, that in inflammatory Swellings, there be not too much tampering, as is customary, with cooling Applications, because such will obstruct the cutaneous Pores, thicken the collected Matter, hinder the breathing of the Part, and increase the Inflammation ; unless by the strength of Nature, or Purgative Medicines, there be made some sudden Revulsion, which in many Cases is not very safe to try.

A P H. XCVIII.

In high Fevers ; Fainting proves serviceable, because it helps Sweat and Perspiration.

EXPLANATION.

In high burning Fevers the Fibres are so violently contracted, that the Skin is render'd almost hard and impervious like Parchment ; at such times therefore Fainting does good, if it can be procured without any violent Means, because it so much relaxes the Solids, and gives way to the circulating Juices, as to admit a great deal through the Skin, which ought to have been carried off through other Passages ; and thereby the Body is both cooled and lightned ; and the *Equilibrium* between the contractile Force of the Vessels, and the Resistance of their circulating Fluids, more easily again restored. Nothing therefore can be of greater Service in the beginning of those Distempers, than to evacuate by Bleeding, or gentle Purgatives, or both.

A P H. XCIX.

If the Puncture of a Nerve is stopped with glutinous Pultus's or such like Applications, the obstructed *Ichor* will contract such a sharpness as to bring Convulsions and Death, unless the Wound be again opened with some Oily Dressings.

A P H. C.

That Breathing, which in Tumours is promoted by Applications, that are actually and potentially moistening, proves serviceable ; but otherwise they degenerate into *Schyrry*, by having only the thinner Parts drawn off, and the thick remaining.

A P H. CI.

Any Part obstructed with Blood, or other Juices, as in Tumours, and even in a Pleurisy, is not to be cooled, because when the obstructed Matter is removed, it will cool of it self. See *Aph. XCVII.* above, with the *Explanation.*

A P H. CII.

Hypochondriacal Persons, are cured by promoting Perspiration by Bathing, and using a moist Diet.

E X P L A N A T I O N.

There is a vast Difference in Hypochondriacal Persons, as to the Constitution of their Solids, and therefore they must be very differently treated in order to their Cure. In some the Fibres are drawn up by a great deal too straight, and differ not much from *Manicks*; others have too lax a State of the Solids, especially of the cutaneous Fibres, and is generally owing to too tender a *Regimen*, and wearing too thick Apparel, and Flannel next the Skin, than which nothing is more hurtful. With the former, warm Bathing, and a moist soft Diet must be serviceable, because they relax the Fibres, and give free Passage for Transpiration; the Matter of which when retained, not only irritates the Membranes, and occasions sharp Pains; but also so much disturbs the orderly Vibrations of the Solids, as to occasion irregular Motions and Reflexes of the Nervous Fluid towards the Brain, whereby the Representations of external Objects are confused, and Fear, Anger, or the like, frequently excited, when there is no just Occasion for such Passions. But in the latter sort, relaxing Methods are hurtful, because the nervous Fluids are too much wasted already by the openness of the Pores, the want of which spoils very much the Elasticity of the Solids, occasions Heaviness, Flatulencies, and Indigestion; and frequently Consumptions; and upon any sudden external Cold, Cholick Pains and Distensions of the *Præcordia*, See further, *Aphor. XII Sect. III.* The Remedy here is to strengthen, and give a Firmness to the Solids, whereby the relaxed Pores may be drawn up, that nothing may pass which ought not to go off that way, and that the Juices may be digested and broke fine enough to perform their several Offices, and afterwards pass off by their proper Outlets; and this is best obtain'd, by gradually coming into a cold

Regimen,

Regimen, a solid drying Food with generous Wine, the use of *Subastringents*, and moderate Exercise.

A P H. CIII.

Perspiration made by Fomenting, upon a full Body, draws more than it disperse, as appears by the Case of *Simon*.

EXPLANATION.

There will always be the greatest Derivation of the Fluids, where there is the least Resistance ; therefore because Bathing or Fomenting any particular Part at that time relaxes the Solids of that Part, that is, abates their Resistance of the circulating Blood, there must necessarily crowd into that Part a greater store of Fluids than before; and if such Increase exceeds the Quantity drawn out through the Pores by such Bathing, the Collection of Humours in that Part will be increased thereby : To prevent which, the best way is to abate the Force of the circulating Fluids before-hand, by proper and cooling Evacuations ; and therefore such Applications are never safe upon a full Habit of Body.

A P H. CIV.

Those Bodies which perspire much insensibly, as Children, are neither to be let Blood, or Purged.

EXPLANATION.

But upon any Hindrance of Perspiration, they have the more need of such Evacuations, because they are the sooner injured by It.

A P H. CV.

Why do Spots arise in the Skin ? Because the Perspiration of a malignant *Ichor* is obstructed.

EXPLANATION.

Whether it be meant here of Scorbutick or Fever Spots, 'tis either way a Mistake. For the Spots in both are occasioned by the Blood it self breaking thorough the Extremities of the Vessels, either by its Thinness and Sharpness, or by the Acceleration of its Motion ; and stagnating under the *Cuticula*.

A P H. CVI.

Where there is a good Perspiration, a Gangrene will go off ; but if it suppurates, the Part will mortifie.

A P H. CVII.

The Part affected with a Gangrene perishes, because the Arteries through too great a Quantity of Blood, subside at their Extremities. The Remedy is to evacuate sensibly and insensibly.

EXPLANATION.

Whensoever too great a Quantity of Blood, for want of sufficient Motion grows thick and Sizely, it may be the Cause of the Obstruction of the small Arterial Branches ; but until it grows so Sizely, the greater the Quantity is, the greater Impulse it will make upon the Vessels or any thing in the way of its Direction, and consequently is less liable to stagnate in the small Vessels.

A P H. CVIII.

The most gross Humours in robust People, will pass thorough the narrowest Passages ; as it appears in the fat Substance that will sometimes come away by Urine, and the Injections made in the Breast upon a Wound ; which must be by insensible Pores.

EXPLANATION.

There is something very extraordinary in the Tonick vibrating Motions of the Membranes. For 'tis very plain that in a Carcass they are not pervious, but may be blown up and remain distended and hard with the included Air: And yet nothing is more certain, than that in a living Body a great deal is continually sifted through them, and sometimes too of a Matter not very fine: Which cannot otherwise be accounted for, but by the continual shiftings of the Contacts of their constituent Fibres, whereby there are openings alternately made from one Part to another, greater or lesser in Proportion to the smartness and length of their Vibrations; and hence its no wonder, why in Robust Persons, notwithstanding the hardness of their Membranes, the Matter which they Perspire is much grosser, than what will pass off from finer Constitutions, where the Parts are softer and more yielding. See back, *Aphor.* XCVI.

A P H. CIX.

The Matter which goes off by Steam, is both such as is advantageous to part with, and such as is hurtful; and when the Strength increases upon its Waft after Sleep, 'tis a Sign its Obstruction would have been very injurious.

EXPLANATION.

Because what is well digested and fit to part with, mostly flies off during Sleep, as appears by several of the preceding *Aphorisms*; and the more the Strength is recruited thereby, it is the greater Demonstration that it would have been very prejudicial, if it had been longer detain'd in the Body.

A P H. CX.

That Perspiration which is insensible, is natural, and a Token of Health; but Sweat is the contrary. For the Reason, See *Aphorism XXI.* above.

A P H. CXI.

If any part of the Body in Winter is made very cold, the whole will so far be affected by it, as to have thereby both Digestion and Perspiration disturbed.

EXPLANATION.

The partial *Stimulus* upon the Place exposed to the Cold; will immediately by the communication of one Part with another, be convey'd to the whole, so as to render the Fibres more contracted, and consequently the Pores more streightned; by which Perspiration will be hinder'd, and Digestion interrupted; See above *Explanat.* to *Aphor.* LXVIII.

A P H. CXII.

To swim in the Evening is safest: For in the Morning the Water is colder, and may obstruct the Pores, and endanger a Fever.

EXPLANATION.

The Danger is not from the greater Cold in the Morning, (as will farther appear in *Explanation* to the following *Aphorism*.) but from staying in too long, and the Dampness of the Air at that time, which will be apt to hang upon and obstruct the Pores.

A P H. CXIII.

In Summer time to be exposed to the open Air, will hinder Perspiration ; whence Heaviness of the Head, and a Disorder of the whole Body.

EXPLANATION.

A small Increase of Cold hinders Perspiration, and is followed by great Disorders ; whereas in others, a sudden Sense of Intense Cold, so it lasts not long, as in cold Bathing, has the contrary Effects ; because a small and gradual Increase of Cold by degrees, draws the Nerves straighter, and almost insensibly lessens the Excretory Passages ; but a sudden intense Cold contracts them with such Force and Quickness, that by their natural Springs, especially in strong Constitutions, they return again with equal Force and Quickness, and so by repeating smarter and more frequent Vibrations, put the Fluids into brisker Motions than before, promote the thinner Secretions, especially that in the Brain, and render the Body more brisk and lightsome.

A P H. CXIV.

If a Body has been increasing in Weight for five or six Days together, it is not suddenly, but by degrees to be drawn off again ; for obstinate Fasting injures the Stomach, Brain and Heart, and sometimes the whole Constitution.

EXPLANATION.

Although a Body may be increased or lessened in its Bulk very considerably by Degrees, without much Injury ; yet a sudden Change so alters the Contractions of the Solids, and destroys that *Equilibrium* which is necessary to a healthful State, that it is a great chance if it is not attended with Consequences, not easily to be remov'd. About which consult *Bellini de Missione Sanguinis*, where
this

this whole Matter is set in a clear Light. Where therefore any Quantity is either to be added or taken away, regard ought to be had to the time in which such Increase or Decrease has been made, and the Means used to bring it to its settled Standard, proportioned accordingly.

A P H. CXV.

In Autumn the Weight of the Body increases; which, if it be beyond a healthful Standard, will produce Tertians and putrid Fevers.

E X P L A N A T I O N.

It has frequently been taken notice of before, as well as in the immediately preceding, that a Body is capable of very different Weights without Prejudice, especially young People; but that in every Constitution they have their Bounds, which cannot be exceeded without falling into some Distemper. In Autumn the Body is rendered heavier by the gradual Increase of Cold, lessening the Quantity perspired; and this retained Matter is very apt to stagnate in the capillary Arteries, increase the Quantity of Blood, and occasion Fevers, as in *Aphor. XLVI.* above, with its *Explanation*: But if upon the first Attack it can be dislodg'd, and broke small enough to pass out by Sweat, it only produces Agues and intermitting Fevers; otherwise, by its long continuance, it will be apt to degenerate into a State nearer to that of Corruption, and produce what are commonly called Putrid Fevers. See further, *Aphorism XLI, XLVIII, and XLIX. Section II.*

A P H. CXVI.

Extream cold Things in acute Fevers, unless they soon grow hot, are fatal, by hindering all Perspiration.

EXPLANATION.

A sudden Chilliness in such Cases occasioned by too cold Things, unless the natural Heat soon overcomes it, produces a total Stagnation, and Death.

A P H. CXVII.

Nothing is more hurtful to Malignant Ulcers, than those things which hinder Perspiration, as Suet, Oil, and Wax.

EXPLANATION.

The Dressings therefore in such Cases ought to be of Vinous Spirits and warm Detergents.

A P H. CXVIII.

A Quotidian only of the intermitting Fevers, is attended with Danger: Because Phlegmatick Humours hinder Perspiration most.

EXPLANATION.

By Phlegm here is to be understood, that viscus Matter which is produced by the hinderance of Perspiration, and lodged in the Extremities of the Vessels; and this abounds in all Intermitting Fevers, but most in a Quotidian, as appears by the frequent return of the Fits; and therefore there is the more Danger of its changing into a continued Fever, of which no Body can foresee the Consequence.

A P H. CXIX.

A stoppage of Perspiration about the Neck, occasions a Numness of the Head; as likewise does the being exposed to Winds and Rain.

A P H. CXX.

Nothing more prevents a Corruption of the Humours, than plentiful *Ventillation* ; not only by that which is drawn in by the Lungs, but by what is drawn in thorough the imperceptible Pores.

EXPLANATION.

There is nothing undoubtedly of more Importance to the Constitution, than Respiration by the Lungs; but as to any ingress and return of Air, by the cutaneous Pores, in the manner herein hinted at, I do not understand.

A P H. CXXI.

Refrigeratives in acute Distempers bring Death, by destroying Perspiration, as in the Case of *Hermocrates*. See *Aphor.* CXVI. above.

A P H. CXXII.

After Bathing the cutaneous Passages are less'd by anointing with Oyl, on purpose that there might not be made too great a Wast of the alimentary Moisture. But it is therefore to be avoided in dangerous Cases, because it closes the Pores.

EXPLANATION.

It was undoubtedly for this Reason, that the Ancients accustomed themselves to anointing with Oyl after warm Bathing, and certainly with Advantage: But in such Cases, where a large Perspiration is necessary, it is not safe to use it.

A P H. CXXIII.

A Person may happen upon such a way of Living, even when he takes no care about it, as may preserve him to a great old Age.

EXPLANATION.

Which although it may and does sometimes happen, yet a wise Man that has any regard to his own Happiness in this World, or that of his Posterity after him, will hardly run such a Risque, but always employ his greatest Care about that which is so conducive to it, as is a good State of Health.

A P H. CXXIV.

The *Midriff* by Contraction enlarges the Capacity of the Breast, and upon that Dilatation Inspiration is made; and upon its Relaxation the Breast is straightned, upon which the Air is again forced out.

EXPLANATION.

This will appear very plain, when we consider the Structure of this Part. The *Diaphragm* or *Midriff* in its natural situation is very convex on the upper Side next the Lungs, and concave on the other towards the lower Belly: Therefore to put it in a State of Contraction, that is, shorten its constituent Fibres, as far as they will admit of, must necessarily bring it to a *Plain* on both Sides, by which means the Cavity of the Breast will be much enlarged, and thereby the Lungs distended with fresh Air, forcing it self into them by its Weight and Elasticity, which is computed to be equal to a Hundred Pound Weight. And again upon the *Diaphragms* relaxing to its natural State, the Breast becomes less capacious, upon which the Air just before received into the Lungs, is forced out again.

gain. But although the *Diaphragm* in Expiration is in a State of Relaxation, yet its being so, is only the Effect of a joint Contraction of those Muscles which are allotted for that Purpose; and as *Action* and *Reaction* are always equal, so the joint Contractions of those Muscles, must be equal to that Weight, by which the Air was forced into the Lungs, *viz.* a Hundred Pound: For a particular Calculation of which, See Dr. James Keil, of *Animal Secretion*, Pag. 24, 25.

A P H. CXXV.

The Sphincter of the Bladder by Contraction shuts it, and keeps in the Urine: But by Relaxing, opens it, and lets it out.

Of the PLAGUE.

A P H. CXXVI.

Whatsoever is infected with the PLAGUE that Infection will be propagated, as long as its proximate and remote Causes remain; but either of them being taken away, the Malignancy ceases, as the Motion of a Clock upon the loss of one of its Wheels.

EXPLANATION.

How many Causes may concur to propagate the Infection of a Plague, cannot easily be determined; but whatsoever they be, undoubtedly its Violence will cease as soon as they are removed.

A P H. CXXVII.

The Plague is communicated not by any immediate Contact, but either by drawing in Infectious Air, or the Steams of tainted Furniture; and it is thus. The Vital Spirits are first infected by the Air, and from the infected Spirits the Blood is ccagulated, which produces black Spots, *Carbuncles*, and *Buboes*; and if not sufficiently discharged, occasion Death; but if it be all thrown out, they escape.

EXPLANATION.

Authors abound who have writ of Pestilential Diseases, and the manner of their Attacks; but I believe there can no where be found so rational an Account, as in Dr. Mead's *Fifth Essay of Venomous Exhalations*, &c. in his *Account of Poisons*;

Poisons ; and indeed throughout that whole Book, the Reader may be instructed, in that Mechanical Procedure, by which great Alterations are brought about in the Animal Fluids, by very minute and unheeded Causes.

A P H. CXXVIII.

If the whole Infection be forced out into *Bu-boes* and *Carbuncles*, it is well ; otherwise fatal.

A P H. CXXIX.

The Plague is not produced in us, but arises from external Causes ; as is manifest from such who are shut up in *Cloysters*.

EXPLANATION.

It is agreed on all Hands, that such Diseases have their Rise from, and are propagated by a Distemperature of the Air ; and it plainly appears to be so, by its affecting more or less all Kinds of living Creatures.

A P H. CXXX.

All do not die of a Plague, but about a third Part, which may be known by those who view the dead Bodies,

A P H. CXXXI.

They who think black Spots and *Carbuncles* denote an Aduſtion of the Humours, are mistaken ; for very often old People, both externally and internally cold, and without any Fever, in the Space of two Days go off with the same Symptomes, from a Stagnation of the Blood.

A P H. CXXXII.

If part of the Blood by the Infection of the Vital Spirits coagulates, and be wholly discharged by *Buboes* and *Carbuncles*, they recover; but otherwise they die, as in the black Spots.

A P H. CXXXIII.

Where the *Buboes* and *Carbuncles* are opened, and the tainted Matter wholly discharged, They recover; but otherwise they die.

EXPLANATION.

As to the three preceding they are much the same, what is meant by Aduſtion although a very common Term, is not eaſe to be underſtood; but by the Coagulations of the Blood made by the infected Spirit; it is plain from what has gone before, that whatever alters the Contractions of the Veſſels, will likewise alter the Textures and Cohæſions of the Blood, by giving it a greater or leſſer degree of Motion than it had before, Where therefore the Spirits are diſtemper'd, that is, when the Solids are not duly ſupplied with that peculiar Fluid, which is neceſſary to maintain their Elasticity, their Contractions will be changed, and the Blood conſequently alter'd, in ſuch a manner as may diſpoſe its Parts to more forceable Attractions and Cohæſions, by which ſuch Grumes and Stagnations are generated; but if the Conſtitution is ſtrong enough to keep on the Circulations for ſome time, they will gradually be thrown upon ſome particular Part, and collected in a conſiderable Quantity, ſo as to form thoſe Tumours; and in ſuch there is much the greateſt likelihood of Recovery, becauſe by thoſe Diſcharges the Blood will the ſooner recover its natural Conſtitution: Whereas, when it is not ſo thrown off, it is a great Chance but it induces a total Stagnation, which is Death.

A P H. CXXXIV.

There are two ways of checking a Pestilence ; one is by removing those who are found to distant Places, and the other by giving room to the Infected to Air themselves ; the latter likewise is to be done two Ways ; by not confining the Infected to Places disagreeable to them ; and by not burning their Household-Stuff.

A P H. CXXXV.

They are soonest infected who have weak Lungs ; they who have sound ones the contrary : And it is a sign of weak Lungs, when upon drawing in the Breath with the greatest force, the strength of the Pulse abates.

E X P L A N A T I O N.

Because it is supposed that the Infection is chiefly taken from the Air in Breathing ; although perhaps some noxious *Effluvia* may insinuate themselves into the Blood by the cutaneous Pores, as *Bellini* endeavours to prove, *Prop. 27. De Febris* ; the weaker therefore the Lungs are, the less able are they to resist the mixture of the infectious Particles with the Blood, drawn in from the Air, or break them sufficiently to alter their Figures, and destroy their Efficacy upon it. And the reason why the Pulse is weakned, where the Lungs are weak upon drawing in a large Quantity of Air at once, is, because such an Additional Weight, presses so much upon the Blood-Vessels in the Lungs, that they cannot thorough the decay of their Springs, repeat their Pulsations with the usual Quickness and Strength, and consequently the Pulse at that time must be much abated.

A P H. CXXXVI.

The Pestilence is not as a Fire which increases according to its supply of Fuel: For the *Pabulum* of the former remaining the same, it will decrease.

EXPLANATION.

I cannot well understand here what is meant by the *Pabulum*, unless it be an infectious Air; which if it is, the Proposition is not true; for while that continues, the Disease will so too.

A P H. CXXXVII.

Pestilential Steams are carried away by Currents of Wind, but not at all by the lucid Part of the Atmosphere.

EXPLANATION.

It is confirm'd by divers Instances of the removal of the Seat of the Plague by Winds, from one Country to another, according to the Winds Course; which seems to conclude, that the Infection is convey'd by the grosser part of the Air, because it is liable to be removed by such Motions, but not at all affected by those finer Rays which produce Light.

A P H. CXXXVIII.

They who seek for any other Remedy for the Plague, than flying from the Place infected, are either such as are very ignorant, or else wait for some private Advantages.

EXPLANATION.

Sanctorius seems to have been an utter Enemy to all Kinds of Medicine in this Distemper, as appears further by the two last *Aphorisms* of this Section, but unjustly; for by
Expe-

Experience a great many have been found of wonderful Service both by way of Prevention and Cure, when administered by a skilful Hand.

A P H. CXXXIX.

Very few of the Wealthier People are cured by Medicines, but a great many of the poorer Sort recover without them.

A P H. CXL.

Why does the P L A G U E continue long?

First, Because while it rages, Persons air their tainted Furniture, which being stole by Thieves spreads the Infection, whereas when the *Plague* is abated they would not in themselves be infectious; otherwise the *Plague* would continue for ever.

Secondly, Because the infected being expelled the Town, others do not take care to Air themselves enough, by which the Infection spreads.

Thirdly, Because the People are not forbid to assemble together in the Churches, for at such time they ought to perform their Devotions in the open Air.

Fourthly, Because they choose foreign Surgeons, who the greater the *Plague* is, are the better pleased.

Fifthly, Because they do not remove the Infected into other Houses, separate from those who are well.

Sixthly,

Sixthly, Because they use internal Medicines in the *Plague*, whereas there are none but what are hurtful.

Seventhly, Because they suffer the buying and selling of Poultry, which by being handled by infected Persons communicate the Contagion to those who are well.

EXPLANATION.

All these Reasons together, I believe will fall short of giving full Satisfaction for the long continuance of such Contagions. Burning Household-Stuff or any thing else at such times, although belonging to infected Persons, has been always found of Service, and not to have any Tendency at all to propagate the Disease. The *Sixth*, is owing to his particular Prejudice against Medicine in such Distempers, as appears above : But it is well known, that there are abundance of Medicines of singular use at such times.

Medicina Statica.

S E C T. II.

Of AIR and WATER.

A P H O R I S M I.

COLD Air and cold Bathing, give a greater warmth to strong Constitutions, and by removing what is superfluous, render them lighter; but they cool weak Persons, by overcoming their natural Heat, and thereby also render them heavier.

E X P L A N A T I O N.

A Thorough and clear Understanding of the Contents of this *Aphorism*, is of very great Concern and Importance to every one who would be acquainted with the true Causes of Distempers and their Cures, and what is absolutely necessary thereunto, the *Mechanism* of a Human Body. See the *Explanations* to *Aphor.* LXVIII, XCVI. and CXIII. *Section I.*

A P H. II.

A warm Air and Baths, actually warm, unless undigested Humours prevent it, promote Perspiration, cool the *Viscera*, and render the Body lighter,

EXPLANATION.

Any moderate external Warmth-relaxes the Solids and opens the cutaneous Pores, and gives greater Liberty thereby for the Perspirable Matter to pass off ; but if the Humours are crude, and not sufficiently digested, that is, if they are gross, and not broke small enough ; that easie Relaxation which otherwise would give them the more room to fly off, will only occasion a greater Derivation of them towards the Circumference, where, by their Grossness and Indigestion, they will be obstructed in the capillary Vessels ; and such an Obstruction by a continual supply from within, will increase, until the Solids are stimulated to make larger sensible Evacuations, or raise a Fever. But where such indigested Matter does not hinder, the Causes above-mentioned will much increase Perspiration, and of Consequence lighten and cool the Body.

A P H. III.

The external Air which passes through the Arteries into the Body, may render the Body heavier or lighter ; lighter, if it be subtile and warm ; and heavier, when thick and moist.

EXPLANATION.

A warm Air will promote Perspiration, for the Reasons given in the preceding *Aphorism*, and of course lighten the Body : And likewise will a cold and moist Air obstruct the Perspirable Matter, and render it heavier ; but that the Air passes into the Body by the ways herein mentioned, *viz.* By the Arteries, must be a mistake, and owing to a want of the Knowledge of the Circulation, which was not known in *Sanctorius* his Time. How the various Temperatures of the Air alter and affect the Body, may be collected from several of the Explanations of the preceding *Section*, and will further appear hereafter under their proper Heads, consult also *Dr. Wainwright* of the *Non-naturals*.

A P H. IV.

What the Weight of the Air is, may be collected from several Kinds of Salt dried first in the warm Sun, and then exposed in the Night to the open Air. *Secondly*, From the greater increase of Cold as to our Sense of it, than what is discernable in the *Weather-Glass*. For the Measure of its Coldness to us is its Moisture and Weight; *Thirdly*, From the greater or lesser Warpings of thin Boards, especially if they be of *Pear-Tree*. *Fourthly*, From the Contractions of *Lute-strings* and *Hemp Cord*.

EXPLANATION.

Most of the Experiments here, have respect only to the Moisture and Dryness of the Air, the Atmospheric Pressure, and its Elasticity were, if not altogether, yet very much unknown in the Time of *Sanctorius*; and therefore it is no great wonder to find the Properties of it so obscurely mention'd here; especially when we consider the vast Improvement in Experiments of this Kind, but since *Mr. Boyle's* Time, which are so manifest and convincing, and indeed now so common to be met with, that he must be a great Stranger both to Men and Books, who wants any Informations therein.

A P H. V.

The Weight of Water may easily be known by weighing heavy Bodies in it; for that is the lightest, and consequently most wholesome, in which a Body weighs heaviest: But that Water in which such a Body weighs less, is heavier, and not so wholesome.

EXPLANATION.

Nothing likewise is now more common, than to learn the Specifick Weight of any Liquors by weighing heavy Bodies in them ; which is well known to all such who try it, to be a most certain and infallible Rule. And this is done with Scales, which are commonly sold for that purpose, by the Name of *Hydrostatical Scales*. That the lighter Water is, it is the more suitable to the Constitution, the Reason is plain, because as it answers all the Purposes of diluting, and the like as well as any other, if not better, it also passes afterwards the Straineries of the Body better : For the heavier the Water is, it must needs be the more charged with greater Quantities of gross Mineral Particles, which will not only render it more unfit to get thorough the finest Vessels and Orifices of the Glands, but likewise be very apt to form Stony Concretions in the Body, by the Attractions and Adhesions of those Mineral Salts with which it is impregnated. It might therefore be of much Service to such who are subject to the Gravel and Stone, or any Diseases from Obstructions, to take the utmost Care about their Water, and always be sure to use that which is lightest. This further affords a very good Hint to such, to use as much as possible, a soft lubricating Diet ; for by such means those Salts would in a great measure be sheathed, and as the constituent Parts of an Heterogenius Fluid, more or less obey their Attractive Powers, that is, are more or less attracted by one another, as they meet with greater or lesser Resistances from the Fluid they make a Part of ; so they would be prevented thereby from running into those Contacts and Cohæsions, in order to form those little Petrefactions in the Bladder and Kidnies.

A P H. VI.

A heavy Water, and a foggy heavy Air, convert the Perspirable Matter into an *Ichor*; which being obstructed and not again resolved, is apt to bring the whole Body into an ill Habit.

E X P L A N A T I O N.

What will certainly be the Consequences of an obstructed perspirable Matter, none can foretel, it being liable to be altered by so many unheeded Causes. and afterwards thrown out sometimes by one and sometimes by other Emmunctories, according as the Constitution at that time may be disposed to manage it.

A P H. VII.

In a cold wholesome Air, Perspiration may be hinder'd; but if the Fibres likewise thereby obtain a greater Firmness and Strength, the Weight of the retained Matter, will not be injurious or percievable.

E X P L A N A T I O N.

From *Aphorism* XXVIII. and XXIX. *Section I.* it already appears, that the Weight of the Body, as to the Perception the Person has of it, is as the Strength and Vigour of the Solids; where therefore the Fluids are increased by any Cause whatsoever, and there be at the same time a proportionate Addition to the Strength of the Solids; such an addional increase of the Fluids will not be perceived, or be prejudicial. But,

A P H. VIII.

In a foggy Air, Perspiration is lessen'd; the Pores are obstructed, and the Fibres weaken'd and not rendered more firm, and the Weight of the retained Matter is both percievable and injurious.

EXPLANATION.

Why a cold wholsom Air, (by which is to be understood, that which is cold and clear,) should hinder Perspiration, and yet strengthen the Body, and a foggy cold Air also hinder Perspiration but weaken the Body ; is a Difficulty much like that in the LXVIIIth *Aphorism*, *Section I*. Where it is said, that External Cold hinders Perspiration in weak People, but encreases it in the Robust ; and solvable only by the same way of Reasoning. For the Concentration, and Dissipation of the *Vital Heat*, so much talk'd of, is saying nothing, because they are Terms which convey no Idea of any Mechanical Procedure, by which only all Physical Agents operate, and their Effects are to be accounted for.

There is one Enquiry, which if persued with Penetration and Judgment, would let in a surprizing Light, to the true Mechanism of the Solids of a Human Body, and that is concerning the Composition and Texture of a *Distractile Fibre* ; so far I mean, as to find out what Order and Texture of Parts will serve to make up such a Thread, as is capable of being drawn out to a considerable Length without breaking ; and that when the force which so extended it, is removed, will restore or contract it self again to its former Dimensions. *Bellini* has furnished us with a very good Hint in this Affair, in his *Opuscula*, *Prop. 51. de Villo contractili* ; and has gone a little way in the following Proposition towards its Application. It is to be wish'd, that, that great Master of Mechanical Reasoning, (who perhaps as to the Services done to the Physical World, by putting Men upon that only way of Thinking, by which any Knowledge therein is attainable, has not had his equal) would have carried his Theory something further, and been more particular. But from what he has said in the Place above-mentioned, *de Stimulis*, and before upon the same Head, in his Propositions *de Missione Sanguinis*, any Person who is rightly turned to that way of Thinking, with Pains and Industry may do it himself. It would be of an unpardonable Length to meddle with it here, although I have had some Thoughts thereupon, and so much to the Satisfaction of my own Mind, that I believe I shall hardly be able to deny

ny my self the Pleasure of drawing them up into some Order, and presenting them to the World at another time. For the present therefore, I can only refer the Reader to the above-mentioned Places of *Bellini*, and to the *Explanation* to the *LXVIIIth Aphor. Sect. I.*

A P H. IX.

If in a warm Season a cold Day happens, in the Space of that Day, supposing the way of Living to be the same, about a third Part of the Perspirable Matter will be obstructed ; which unless it be diverted by some of the Sensible Evacuations, will be disposed to Putrefaction, and disorder the whole Constitution.

E X P L A N A T I O N.

A sudden Change of Weather from Hot to Cold, cannot but very much affect and disorder the Constitution, by suddenly drawing up and straightning the cutaneous Pores ; whereupon the Perspirable Matter will in a great measure be detained, and occasion Fevers, unless by the Strength of the Constitution it be soon thrown off by an increase of some of the Sensible Evacuations. And this is the Reason, why frequently upon Change of Weather, at the same time, we meet with a great many together taken with *Diarrhœa's*, and some of them attended with Vomitings, and very ill Symptoms ; or else for want of such Discharges in Time, with Fevers.

A P H. X.

The Obstruction of the Perspirable Matter which happens in weak People, upon a sudden Cold, is much worse than that which is made gradually.

EXPLANATION.

All Changes of the Constitution whatsoever, are much more easily effected by Degrees than of a sudden; because let it be to either Excess, Fulness, or Want, the Solids will stretch or draw up insensibly by a gradual Procedure; whereas by a sudden Change into either Excess, their Contractions must needs be so much alter'd, as cannot speedily be done without sensibly disturbing all the Secretions; and therefore the weaker a Body is, the secretory Organs will be less able to discharge a greater Quantity suddenly thrown upon them, than what it is by a gradual increase.

A P H. XI.

Being exposed to a cold Air after Heat, by leaving off Garments, a Body may perspire thereby in the Space of a whole Day about two Pounds the less, and yet perceive no harm from it.

EXPLANATION.

But this can be only in strong Constitutions, and the Robust, who afterwards will be able to throw off that additional Load without receiving any Damage thereby; their Solids being only invigorated by such an increase of Cold will vibrate the quicker and stronger, and thereby soon break the detained Matter, and force it away; but the Experiment therefore is not safe to be tryed by any other.

A P H. XII.

A delightful and moderately cool Air, does more Harm to those who are Hot, than excessive cold Air or Water: For it does not render the Body lighter, but obstructs Perspiration, and weakens it. Whereas the other does obstruct, but at the same time strengthens it, and thereby renders it more lightsome.

E X P L A N A T I O N.

The Distinction herein again made between the Obstruction of Perspiration by a moderate and gradual Cold, and that made by what is sudden and intense, as it has before, so it can never be too much inculcated, because there is so much turns upon a true Knowledge of its Causes; See, as before, *Aphorism CXIII. Sect. I.* This also will give us a good Reason wherewith to encounter the Prejudices of those, who in using the cold Bath, are very fearful of going in when they are Hot, whereas in several Cases it might be proved, to be the most seasonable Time.

A P H. XIII.

Those ill Qualities in the Air and Waters, which dispose to a malignant Putrefaction, are such that their Increase is seldom taken notice of; as if their peculiar Natures were such as to render the Solids stronger, as it happens to *Manaicks*.

E X P L A N A T I O N.

The first Impressions of a malignant Distemper are made frequently by such small and imperceptible Agents, that there is no need, as in this *Aphorism*, to have Recourse to any additional Strength in the Solids, to account for their being so little taken notice of for a long time; for very great and fatal Alterations may be made upon the Juices, by Causes not so much at first perceivable by their Bulk,

as afterwards by their Tragical Consequences. How and in what manner very small, and at first unheeded Instruments may produce such great Changes in the Animal Fluids, has been demonstrated with a great deal of clearness and strength, by that so often cited great Physician, *Bellini de Stimulis*, by *Baglivi* in his History of the *Tarantula*, and Dr. *Mead* in his much esteemed Book of *Poisons*; as for the Solids of *Manaicks* being render'd stronger by any Matter which is the Efficient Cause of their Distemper, as here insinuated, is a Mistake; for the straitness and hardness of their Fibres seems much rather the prime Cause, than the Effect. Because we find such People bear large Evacuations with Advantage, and are much better by such means as relax the Solids; for to evacuate, that is to lessen the Quantity of the Fluids, is the same as to relax, or enlarge the Capacities of the Solids: And on all Hands 'tis agreed, That their Distemper is remitted or enflamed as their Fibres are more or less harden'd or let down, of which *Baglivi* takes notice in several Places of his *Specimen de Fibra Motrice & Morbosa*, and observes in the Dissection of some *Manical* Persons, the *Dura Mater* to have been harden'd to a very great degree, and to be almost dry. And upon this Account it is, that they are no ways affected by the Alterations of the external Air, their Solids being drawn up so very straight, as not without great Difficulty to be made sensible of such Changes.

A P H. XIV.

Swimming in cold Water after violent Exercise is very delightful, but fatal; for nothing is more destructive than Extrems are to one another.

EXPLANATION.

By violent Exercise the Fluids will be very much broke, and a great deal of Perspirable Matter made ready for Expulsion; and the Solids also so very tense and strait, that upon swimming immediately afterwards, if the Water is not excessively cold, they will yield and relax in Comparison to that Contraction which the violent Exercise

eise had before drawn them up to. And this Relaxation at the same time joyned with the Chilliness from the Water, will occasion such a Stagnation of the Fluids upon a double Account, as without a great deal of Difficulty will hardly be removed, if it does not occasion immediate Death.

A P H. XV.

There are several Causes which gradually distemper the *Viscera*, without any sensible increase of Weight or Uneasiness.

EXPLANATION.

As in some Constitutions not fitted for such ways of Living, the frequent supping of *Coffee*, Tippling of hot *Spirituos Liquors*, Smoaking *Tobacco*, and several other Things too long and tedious to enumerate, which are often found by Degrees to steal upon some Constitutions, and by injuring some particular Part or Secretion, to induce a general Disorder,

A P H. XVI.

Violent Exercise in a pleasant Southern Air, is often destructive: For the Air hinders Perspiration, and the Exercise inflames the Humours.

EXPLANATION.

The Exercise by breaking and dividing the Fluids into smaller Parts, makes them take up more Room than before, as has been proved in *Explanat. to Aphor. Sect. I.* where therefore this is done, and at the same time Perspiration by any Cause whatsoever hinder'd, there must needs be a strange Alteration in the *Equilibrium* between the force of the Contractile Solids, and the Resistances of the circulating Fluids; and so far perhaps sometimes that the Pressure or Expansion of the Fluid, (which is the same as I suppose *Sanctorius* here means by an Inflammation of

the Humours) against the distractile Vessels will be so great, as to hinder their Powers of Contraction, by which their *Tone* must soon be lost, and consequently a Cessation of the Motion of the Fluids will follow thereupon. For a total Stagnation may be induced, as soon by an overstretch of the Vessels, whereby they cannot contract again, as by their subsiding for want of a due Impulse of the Fluids to distract and raise them; and on either Hand it is equally fatal. Where therefore by the Causes herein mentioned, a Body is brought into this Hazard; one Step absolutely necessary towards a Remedy is immediate Evacuation, and relaxing the Solids so, as if possible, to raise a Breathing and a Discharge by the Skin, in effecting which, all *Stimuli* are industriously to be avoided, as *Blisters*, unless towards the latter End, when frequently the Case is so alter'd, that the Fluids grow viscid and stagnate thorough the decayed Contractions of the Solids, and may therefore then want a Spur; but at first such Means increase the Cause. And this is chiefly the Case of those we call *Inflammatory Fevers*.

A P H. XVII.

When too cool an Air is discerned after Supper, the Perspiration of those Parts which are uncovered with Cloaths, will be obstructed: And the next Day at Night, in a great many will occasion a Heaviness and Pain of the Head.

E X P L A N A T I O N.

The Reason why taking Cold is frequently attended with Pain and Heaviness of the Head, is because from the *Meninges* or Coats of the Brain, the Solids of the whole Body have their Rise and Invigoration: And as the hindrance of Perspiration necessarily increases the Quantity and Weight of the Fluids, the Sense and Uneasiness occasion'd by such an Increase or Addition, must needs be first felt in the Head, upon the Account of a greater Impulse of Blood upon those Membranes, as well as

as by the harder Task they have thereupon, to enable all the Solids to carry on and manage such an Additional Weight.

A P H. XVIII.

To be carried suddenly from a hot into a cold Air, is hurtful ; because the Body is thereby rendered heavier than it ought to be : And likewise the same, to be removed from a cold into a hot Air ; because it is thereby weaken'd.

EXPLANATION.

The former Part abundantly appears, from what has been said already ; and the latter is true, because a sudden Removal into a hot Air slackens the Solids, in whose due Contractions and Firmness, Strength consists.

A P H. XIX.

Weak Persons convert the obstructed Perspirable Matter into Urine most in Winter-time, but the strong most in Summer.

EXPLANATION.

Because a weak Constitution, although it is not able to digest the obstructed Perspirable Matter, sufficient to pass it off the most natural and proper way, by an increased Perspiration ; yet in Winter-time, the Solids may be harden'd and invigorated so much as to break it small enough to take its Course through more open Passages, viz. The Kidnies and Bladder; whereas in Summer, such Persons would not have Strength enough to fit it for any Evacuation ; and therefore unless it be diverted, and brought back by a *Diarrhœa*, they must fall into Fevers. But the Solids of even the most Robust in Summer-time may be so far relaxed and weaken'd by the Heat of the Season, as not to grind the obstructed Matter small enough for

Perspiration, and therefore be under a necessity of dispatching it by the next most convenient Outlet, which is by Urine; although the great Strength and Vigour of such Persons in a cold Winter Air, might without any great Difficulty, wear away a considerable Quantity of obstructed Matter by its proper Passages, *viz.* the cutaneous Glands.

A P H. XX.

Any Draught of Wind hinders Perspiration, and renders the Body heavier and hotter.

A P H. XXI.

A cool Wind always hinders Perspiration, and is hurtful, but most to the Head; because it is most exposed to it.

EXPLANATION.

That a Draught of Wind upon any particular Part, or a cool Air upon the whole Body, does hinder Perspiration, and more particularly discompose the Head, appears already from a great many of the foregoing *Aphorisms*, as well as from the XVIIth of this *Section*; and how such Causes also render the Body hotter, that is, how they raise a Fever, may be seen explained at large in the *Explanation* to *Aphorism*, XLVI. *Section* I.

A P H. XXII.

Of all the Seasons of the Year, the dryest are most Healthful; because they render Bodies lighter.

EXPLANATION.

That is, in dry Seasons, there is always a freer Perspiration, than in a wet damp Air, and consequently more Health. In a dry clear Air, the Perspirable Matter is best discharged ; because the Skin is kept both dryer and harder than in wet Seasons, whereby there is both the freer Passage for it, and more liberty for it to exhale and fly off afterwards, whereas in wet damp Weather the Skin is moisten'd by the external Air, and the Pores foul and clogged with the gross Particles hanging upon it, and less liberty left for the Perspirable Matter to get off.

A P H. XXIII.

Temperate Persons weigh in Summer time about three Pounds less than in the Winter.

EXPLANATION.

It has more than once been before observed that the Body is capable of several different *Standards*, and yet continue in a state of Health ; the Difference therefore which is made between Winter and Summer, is such as the Body gradually passes into, and receives no Injury thereby ; for such a Change on a sudden would endanger its falling into some bad Distemper. And the Weight of the Body is less in Summer than in Winter, because there is continually made a *larger* Perspiration, that is, there is made a greater Waste at that Time thorough the Pores of the Skin in Proportion to the Quantities taken in by Eating and Drinking, than what is made the same way, in Winter, and in cold Weather. A *larger* Perspiration, I say, not a *better* ; because it appears already, that the most beneficial and serviceable Perspiration, is made when the Nerves are harden'd and firm, as they are in clear cold Seasons, and the Body then enjoys the most perfect State of Health, as will likewise appear further from the subsequent *Aphorisms*, and therefore,

A P H. XXIV.

That Lassitude or Weariness which is perceivable in Summer time, is not because the Body is then heavier, but because it is then rendered weaker.

EXPLANATION.

Which is also confirmed by the following, and the Reason of it very plainly demonstrated.

A P H. XXV.

The Body becomes weaker in hot Weather, because with the Perspirable Matter a great deal flies off which cannot be spared, and because the natural Heat, is not concentrated.

A P H. XXVI.

In Hot Weather something passes thorough the outer Skin, which carries along with it, some Part of the useful Juices.

EXPLANATION.

The Three latter *Aphorisms* are very much the same in Substance with one another, and express but the very same thing in Terms something different.

A P H. XXVII.

In Summer-Time, the Body is not uneasy from the Heat of the Air immediately ; for every Part of the Body is even then hotter than the external Air ; but because at such times there is not a sufficient Coldness to concentrate the *Natural Heat* : By which means it becomes so scattered, that it cannot drive out the Perspirable Matter, (in its own Nature Hot,) by insensible Steams ; which Matter by being retained, acquires a sharpness, and is really the Cause of that Uneasiness we are under from a Sense of the Summer Heat.

EXPLANATION.

The Terms herein, *natural* or *vital Heat*, and its *Concentration* by extream Cold, are such as *Sanctorius* himself seems to have had but very obscure Notions about, and therefore when ever he uses them, is either very difficult to be understood, or else is apt to be led into some Mistake. It hath been already shewd, under *Aphorism LXVIII.* of the *first Section*, which see, that the *Natural* or *Vital Heat* is always as the Bloods Motion, and the Bloods Motions as the contractile Force of the Solids ; and therefore that at such Times, that the contractile Force of the Solids is greatest, the *Natural Heat* will be so too. And in this Sense it may properly be called *Absolute* ; but as the Term is sometimes used comparatively, and with Relation to other Bodies or the external Air, it may then be called with more Propriety, *Relative Heat* ; now with regard to this Distinction, and the Causes before assigned of the *Absolute Heat* of the Body, nothing is more certain, than that the *Absolute Heat* is greater in Winter than in Summer-Time, because in the coldest Weather, the contractile Force of the Solids is much strongest, although indeed in the other Sense, the Body is then coldest, that is, with Relation to the greater Sense and Perception it has then of Cold from the external Air ; and also of Consequence the

the *Absolute Heat*, contrary to the *Aphorism*, is least in the Summer-Time, the Solids being then more relaxed, and not so able to circulate the Fluids with so much Force, although it may indeed be said to be relatively hotter, that is, it does not feel so much Cold : And after this manner Custom has established the usual way of Speaking, when a Person says he is colder or hotter, nothing else is to be understood, but that he has a greater or lesser Sense of Cold at that Time upon him, than before, and that only from the Alterations of the Air; but were he to express himself strictly as to the *Absolute Increase* or *Decrease* of his *Natural Heat* as above explained, he must say quite the contrary, for the Reasons before given. If it be urged, that in Summer-Time, the external Heat of the Air by expanding and rarefying the Animal Juices, assists their natural Heat, and thereby renders them hotter than in Winter; it will not at all help the Matter, because such *adventitious Heat*, is so far from being called *Natural* or *Vital Heat*, that it destroys it and weakens the Body, and renders it less able to withstand external Injuries. Thus it is easie to obtain a clear Notion of these Terms, and see the Necessity of making this Distinction; and therefore I hope this seeming Deviation from the *Aphorism* above, will be excused.

That an Uneasiness in hot Seasons, may arise from some Sharpness or Acrimony of the Perspirable Matter, irritating and fretting the Fibres in its Passage, is very reasonable to believe; for the Pulsation of the Solids by being weaken'd, may admit such a Stop of the Perspirable Matter, as may dispose it to such an Alteration, but that such Obstructions are occasioned by the want of external Cold to concentrate the *Vital Heat*, is either saying nothing at all, or concealing a Plain Truth under a great deal of Obscurity.

The Perspirable Matter, may be said to be *Hot* in its own Nature, as it is broke and divided into very small Parts, and thereby when obstructed and stagnant, the more disposed to intestine and fermentative Motions; and so indeed may any Parcel of Matter be said to be *Hot*, that is capable of being put into such Motions; but then it is to be taken notice, that such Heat is the result only of that Motion; and that therefore the Perspirable Matter in

it self, without fermenting, is no hotter, than any other Parts of the Body.

A P H. XXVIII.

When Bodies in hot Weather, in Sleep, either by Day or Night, Perspire or Sweat much, they become lighter, and are not sensible of any Uneasiness from Heat.

EXPLANATION.

Because such a Discharge removes and carries off all that digested Matter, which if retained, would for the Reasons given in the preceding *Explanation*, occasion that Uneasiness.

A P H. XXIX.

A sudden Cold upon Hot Weather, will occasion an Obstruction of the Perspirable Matter, about a Pound in one Day.

EXPLANATION.

The Quantity obstructed will always be greater or lesser, according to the different Diminutions of the Excretory Passages, by such Changes. See *Aphorism XVII, XVIII*, of this *Section*.

A P H. XXX.

If it be a mild Summer, the Body is reduced to a *Standard* suitable to the Season, by Sweating.

EXPLANATION.

Sweating, is Insensible Transpiration made Sensible, either by a great Increase of the Discharge of Perspirable Matter, or by the going off along with it that which is gross and undigested, and not broke small enough to exhale by insensible Steams. If therefore Sweat be not immoderate, that is, if it does not carry off with it too much of the useful and nutritious Juices, it cannot but be the most easie and safe way, especially in warm Seasons, to clear the Body of any Superfluities or ill Humours, occasioned by the Obstruction of the Perspirable Matter.

A P H. XXXI.

If in the Beginning of the Summer Season it Sets in violent Hot, there will arise a great Lassitude ; which if the Heat continues to increase gradually, will wear off, because thereby the Quantity of obstructed Perspirable Matter will be much diminished.

EXPLANATION.

The Lassitude or Weariness upon such sudden Heat, arises from the weakening the Elasticity and Contraction of the Solids by it, as was said before ; whereupon the Body loses of its Strength, and therefore even without any increase of Bulk from Obstructions, will labour under a Sense of a greater Weight, that is, will be under a Weariness or Lassitude, But if such Heat continues gradually to increase, the cuticular Discharges will also by Degrees be augmented, by an enlargement of the Pores, until such a Waft is made as will bring the Bulk of the Body the same in Proportion to its present Strength, as it was before when both Bulk and Strength were greater, or, which is the same, it will be lightened until that Weariness be removed ; whereas, was the Heat quickly to abate or discontinue its Increase, that sudden Relaxation and Weakness of the Solids, would so far fall short of
being

being able sufficiently to digest and break the Perspirable Matter, that it would unavoidably be followed by Obstructions, and perhaps Fevers.

A P H. XXXII.

The same Strength, hath lesser Trouble with a lesser Weight, than with a greater.

EXPLANATION.

By the same Strength is to be understood, the same contractile Force of the Fibres ; and by Weight, the Quantity of the Fluids ; and then it will need no *Explanation*, further than what may be met with in *Sect. I. Aph. XXVIII.* and *XXIX.*

A P H. XXXIII.

Perspiration promoted by warm Air or Water, is hurtful, unless it be to get rid of some greater Evil.

EXPLANATION.

The same likewise is true of the increase of any of the Sensible Evacuations beyond what is natural, both because it puts a greater stress upon the Excretory Organs, and gradually weakens their Springs, and because such increased Evacuations always defraud the Body of some Parts, as cannot without Injury be parted with ; but the greatest Damage is sustained by an increased Perspiration ; because in this Discharge the whole Body is more generally concerned, and therefore all the Solids sooner injured by it, and a greater Waste made of the nutritious Juices.

A P H. XXXIV.

In the Summer Seasons, strong Persons perspire most in the Day-Time, but in Winter most in the Night.

EXPLANATION.

Where the Strength and Vigour of the Solids is preserved the same, the Fluids will continue to be circulated with their usual Velocities and Impulses ; and as Perspiration is a Discharge of the most digested and finest Parts of the Juices thorough very fine and imperceptible Pores, it follows, that whatsoever most favours any Passage those Ways, without lessening the Strength of the Solids, must undoubtedly most promote Perspiration. And as it is certain that any Warmth, so it be not too great, and as was before said, to impair the Strength of the Body, enlarges the cutaneous Pores, and such Warmth in Summer being greater in Day-Time, by the near Approach of the Sun, and during Winter, in the Night, by the accustomed Coverings of Bed-Cloaths ; it follows of Consequence, that in healthful robust Constitutions, where the Strength is not at all sunk by such external Warmth, there will be made at those Times, the largest Discharges by insensible Transpiration.

A P H. XXXV.

An obstructed Perspiration in Summer, disposes to malignant Fevers ; whereas in Winter it makes but small Alteration : For Bodies are more subject to an Acrimony or Sharpness of the Perspirable Matter in Summer, than in Winter Seasons.

EXPLANATION.

When the Fibres are weak as in Summer and Sultry Weather, and the Perspirable Matter by any Cause whatsoever happens to be obstructed, the Solids then must needs be the much less able to circulate it and break it small enough for Transpiration, and the Heat also of the external Air, will favour its sooner falling into fermentative and intestine Motions, and dispose it thereby to Corruption, from whence will arise such as are commonly called Malignant and Putrid Fevers. But in cold Weather, both the Constitution is better able by degrees to overcome and wear away such an additional Load, and the obstructed Matter will besides be not so apt to Putrefaction, but sometimes continue a considerable while without any great Injury.

A P H. XXXVI.

Sleeping in Summer Time with the Body uncovered, or in the open Air, by hindering Perspiration, very much disposes the Humors to Putrefaction.

EXPLANATION.

It already appears from what has been said under *Aph. XX. Section I.* How easily the Business of Transpiration is disturbed during the time of Sleep, and that it is more apt to be so then, than at other Times. And how the obstructed Perspirable Matter is most disposed to Putrefaction in hot Weather is plain, from the immediately preceding *Aphorism*, with its *Explanation*.

A P H. XXXVII.

An Obstruction of Perspiration does not warm the Bowels, unless the obstructed Matter contracts an Acrimony by its Stagnation, or by external Heat, or violent Motion.

EXPLANATION.

Although external Cold often obstructs Perspiration, yet by this it is manifest, that the Body is not rendered ever the warmer by the Retention of that Matter, until by external Heat, or violent Motion or Fermentation, it acquires that Quality; which exactly agrees with what was advanc'd under *Aphorism* XXVII. above.

A P H. XXXVIII.

There is seldom much Injury perceived from a liberal Use of *Venery*, when a sudden Cold happens to succeed a hot Season; but when the Air again grows hot, the Body will be sensible of much Hurt.

A P H. XXXIX.

The sudden change into a cold Air after *Venery*, makes amends for the loss sustained thereby by its Concentration of the Vital Heat.

EXPLANATION.

It is not at all to be disputed, but that excessive *Venery*, much weakens the Strength and Elasticity of the Solids, by the violent and intense Contractions they are under at such times, insomuch that a considerable Space of time is required to recruit them with a fresh Stock of Spirits and Vigour; but before such Recruit is made, if the Weather suddenly changes from hot to cold, the Fibres thereupon will immediately be so much drawn up and harden'd, that all the Limbs will be new braced, and the Damage received hardly at all perceivable. But if such a Constitution of the Air does not continue, until the Solids are supply'd and invigorated with a convenient fresh Stock of Spirits, from proper Food; and the Weather happens again to set in hot, the Fibres will again slacken in such a manner, as to occasion

occasion the Loss before received to be considerably felt: But by the Advantages arising from the Colds *Concentrating* the Spirits, is to be understood as before explained, only as the Solids are strengthen'd by it.

A P H. XL.

In Summer Nights a Body is most liable to Fevers, because of the various Alterations of the Air; for in the beginning it is Sultry; in the middle more temperate; and towards the Morning cool: By which the wonted Perspiration is check'd in time of Sleep by throwing off the Cloaths, and the Body is thereby made heavier; which does not happen in Winter-Time.

A P H. XLI.

From the Autumnal *Æquinox* to the Winter *Solstice*, the Quantity every Day perspired, scarce exceeds a Pound; from which time even to the Vernal *Æquinox*, the Body begins to Perspire more freely.

EXPLANATION.

A Person therefore in this Part of the Year, is without doubt much more in Danger of being Distemper'd, than in any other, because the Air continually growing colder and moister, every Day lessens the Quantity perspired, and increases the Weight of the Body; and therefore if the Solids at the same time by the increase of Cold do not acquire a proportionate increase of Firmness and Strength, there cannot but be lost that *Equilibrium* between them and the Fluids, without which it is absolutely impossible to maintain a State of Health. And if the Diminution of Perspiration be so large as here mention'd; it is a wonder that so many pass this Quarter with so few Complaints as they do. From hence may be collected

a great many useful Deductions, with Relation to the Causes and Cures of several Autumnal Distempers. But above all, nothing is more certain, than that a particular Regard ought to be had to the cuticular Discharge, and that without it, 'tis not possible to arrive even at any tolerable management of a Disease.

A P H. XLII.

The Autumn is unhealthful, both because Perspiration lessens upon the supervening Cold, and because that which is obstructed acquires an Acrimony, and a corrosive Quality.

EXPLANATION.

The former Part appears from what has been said immediately before in the preceding *Aphorism*. How the latter is brought about may be seen under *Aphor. XXXV*, and *XXXVI* of this *Section*.

A P H. XLIII.

They escape the Autumnal Distempers, who can preserve their Bodies of the same Weight, as in Summer-Time.

EXPLANATION.

Exercise therefore and Abstinence, are at this time very serviceable and necessary, by taking off, or preventing a continually increasing Load, and keeping the Body to a healthful *Standard*, and at this time likewise, if ever, must Purgative Medicines be of Service, (as we usually say) by way of Prevention. But in the use of such, great Care must be taken that they be mild, and not such as by large Discharges by Stool, will indanger the Diversion of what ought to pass thorough the Skin, the ill Consequences of which sufficiently appear already.

A P H. XLIV.

That Weight which has gradually increased, ought also by Degrees to be carried off.

EXPLANATION.

Every one cannot but be apprised of the Reasonableness of this Caution, because large Evacuations at once are known always to be attended with ill Consequences, and sometimes such as are very Dangerous; nor without the greatest Necessity therefore ought they to be ventured upon. Concerning this at large, consult *Bellini de Missione Sanguinis*. See likewise, *Sect. I. Aphorism CXIV.*

A P H. XLV.

The superfluous Weight of the Body, is rather to be taken away in Autumn, than in the Spring; because it is most hurtful upon a supervening Cold.

EXPLANATION.

When there happens to arise too great a Fulness in the Spring from an obstructed Perspiration, the increasing Warmth of the Season will by rendring the Pores still larger, be very likely to carry off that Load without any other means, if the strength of the Solids does not decay too much at the same time, (See *Aphor. XXXI. Sect. II.*) But in Autumn such Fulness will rather continue its Increase, by the increasing Cold, rendering the Pores still more straight; and therefore at that time there must needs be much greater Occasion for Medicinal Evacuations, in which number *Plebotomy* may be reckon'd not the least considerable, if it be ordered according to the Directions of an understanding Person, who is well acquainted with the extraordinary Changes that may be brought about by that means in the *Animal Oeconomy*.

A P H. XLVI.

There is no Danger of the Autumnal Distempers, if the Body be well guarded against the increasing Cold by warm Garments ; and by the Use of *Diureticks*, it is preserved of the same Weight as before.

EXPLANATION.

See *Explanation* to *Aphorism XLIII. Sect. II.* And warm Garments likewise cannot but very much assist Perspiration, because they guard the cutaneous Pores from being immediately affected by the external Cold, and straighten'd by it ; they preserve also a due Warmth thereby throughout the whole Body. But care must be taken not to overdoe it this way neither, for too great a Burthen of Cloaths may be injurious, both as it waists the Strength (See *Aphorism LV, Sect. I.*) and brings a Person to such a tender Habit, as cannot without a great deal of Difficulty be got rid off. To the same Purpose is the following.

A P H. XLVII.

To be well covered with Cloaths assists Perspiration, and lightens the Body.

A P H. XLVIII.

They who are accustomed to Distempers in Winter that arise from a Fulness of Humours, ought to Purge in Autumn, and not in the Spring, and then to be brought to that *Standard*, which they enjoyed in the Summer.

A P H. XLIX.

But for such Diseases as arise from noxious Qualities, Purging ought rather to be used in the Spring than Autumn ; because in the hot Weather, such Qualities grow worse, more than in the Winter.

EXPLANATION.

These Two *Aphorisms* furnish us with very good Rules, to know in what Cases Spring Courses of Medicine will be most serviceable, and to whom they will be best in Autumn. From what has been said before it is manifest, that in the latter Season it is much more necessary and useful to evacuate where there is nothing but a superfluous Weight to be removed, than in Spring : But where the Juices are distemper'd much in Quality, and the Secretions thereby not duly made, and to remedy which there is required a Course of *Alteratives* ; the approaching Cold at that time might render such means altogether ineffectual, and perhaps sometimes very injurious : Whereas in the Spring the increasing Warmth gradually rarefying and opening the Animal Juices, will very much favour and assist the Operations of a Medicine, and make it much more easie to obtain an effectual Cure. Where therefore a Case chiefly requires Evacuations and *Purgative* Medicines, it ought much rather to be undertaken in Autumn ; but if the Business must be done principally by *Alteratives*, by all means it ought to be set about in the beginning of the Year, which Season as it better assists by its warmth the Operations of such Medicines, so likewise by the very same Warmth, if means towards a Cure are neglected, may a Distemper which has a long time been in *Embryo*, be drawn out into very troublesome and ungovernable Symptoms. From all which, and the preceding, appears also the Reason of the next,

A P H. L.

They who in Spring-Time throw off their *Winter* Garments too hastily, and are too backward, in putting them on again in the Fall, in the Summer-Time are subject to Fevers, and in the Winter to Defluxions.

EXPLANATION.

For Obstructions of the Perspirable Matter in the Spring, which a too hasty leaving off Cloaths may occasion, if they continue, they will endanger Stagnations, Putrefactions, and Fevers ; as has been before explain'd : But by taking Cold in the Fall, the Solids at that time rather increasing than loosing their Springs, will be able to grind and throw off the retained Matter, by an increase of some of the Sensible Evacuations ; which Matter by its Specifick Lightness, will most probably be discharged by the Glands about the Head and Breast. Therefore,

A P H. LI.

If the obstructed Perspirable Matter, acquires an Acrimony, it produces Fevers, and Inflammations ; but when it offends only in Quantity, it causes, Apostumations, Distillations, and Cachexies.

EXPLANATION.

The Contents of this and the three preceding *Aphorisms* well understood, take in a large Compass of the most useful Parts of Practice, and therefore ought to be well consider'd. Any larger Notes upon them would take up too much Room here.

A P H. LII.

External Cold, by concentrating the *Vital Heat*, renders Nature so much the stronger, by how much the easier she can dispense with the Additional Weight of two Pounds.

EXPLANATION.

What is to be understood of the *Vital Heat*, and its *Concentration*, has been explained at large already, *Explanation* to *Aphorism* LXVIII. *Section* I. All therefore that can be learn'd from this is, that the stronger the Body is naturally, the greater Addition of Vigour will it receive from external Cold, so that the Air be clear and dry; thereby it is also enabled the better to bear with any Additional Weight, which may happen by accidental Obstructions of the Perspirable Matter.

A P H. LIII.

Bodies in the beginning of Winter with Ease, but in the beginning of Summer with Difficulty, are brought to the Summer *Standard* of Health.

EXPLANATION.

Because by the growing Strength of the Solids, upon the increase of the Cold from the approaching Winter, Perspiration may more easily be promoted and the Body lighten'd; whereas upon the approaching Heat of a Summer Season, they slacken and grow weaker, and thereby render it much more difficult, to throw off any superfluous Load, and bring the Body to a good *Standard*. See *Aphor. XXXV. Sect. II.*

A P H. LIV.

Health may be preserved intire to an extream Age, where the Body can be kept to the same *Standard*, thorough the Four Seasons of the Year.

EXPLANATION.

Because where the Body is so kept, the Wast and Supply will be so exactly proportionate to one another, that the Solids will be never burthen'd by any unnecessary Weight, nor the Secretory Organs over-strain'd so as to injure their Textures and Functions ; and likewise by their being constantly and duly furnished with a proper Stock of Spirits, will they very slowly wear out and decay. But on the contrary,

A P H. LV.

When the Weight of the Body changes often in the Course of one Year, 'tis dangerous. And likewise,

A P H. LVI.

By how much the greater the Change of Weight is, whether it be an Increase or Diminution of the Blood only, in so much the worse Condition is that Body in.

EXPLANATION.

This is abundantly confirmed by what is daily observed in those who often Bleed, for they seldom enjoy long together a perfect Health, but are more subject to be affected and disorder'd by the several Changes of Weather or ways of living, than other People who have not been accustomed to such an ill Practice : And the Distempers they are most incident to, are such as arise from too great a Quantity of Blood, as Fevers and Inflammations.

A P H. LVII.

The increase of Weight is in the beginning of Autumn, and its Diminution in the beginning of Summer.

EXPLANATION.

The Reasons are plain from several of the preceding *Aphorisms*, for the growing Cold in Autumn gradually draws up the Pores and lessens the cuticular Discharges, whereby the Bulk of the Body is increased until it arrives to its greatest *Healthful Standard* ; but in the Spring the approaching Heat slackening the Fibres, enlarges the cutaneous Pores, promotes Evacuation that way, and renders the Body lighter.

A P H. LVIII.

Those Bodies, who increase in Bulk, are in more Danger than they which grow less.

EXPLANATION.

This is true with Relation only to the Quantities of the Fluids, which while the Solids are good may soon be recruited upon too great a Wast; but when they abound for any considerable time, a great many bad Qualities will be contracted, as most commonly too great a Viscidity, which cannot sometimes, without considerable Difficulty be removed. See *Aphor. XVIII, XIX. Sect. I.*

APH-

APHORISMS *added by the* AUTHOR.

A P H. LIX.

Those Parts of the Body which are covered, Perspire the least, but if they happen to be laid bare in Sleep, although it be in a very warm Air, the Pores will be streightned thereby.

EXPLANATION.

It has already been explained how warm Coverings assist Perspiration, and likewise how easily that Business is disturbed in time of Sleep.

A P H. LX.

An Air too cold, moist, or windy, hinders Perspiration: For which Reason those who are most at Home, as Women, are hardly ever troubled with Coughs, or Catarrhs, or Inflammations of the Lungs.

EXPLANATION.

For these Distempers chiefly arise from Obstructions of the Perspirable Matter, and its being thrown upon other Parts. How those Causes hinder Perspiration, hath been often explained above.

A P H. LXI.

A City Air is worfe than that in the Country, because it is thicker, and prejudicial to the Appetite.

EXPLANATION.

Daily Experience testifies to the Truth of this *Aphorism*. But from how many Causes the Air in a large City may be render'd more unfit for Respiration, and the Offices of Life, than that in an open Country, would be of too great a Length to enter into here.

Medicina Statica.

S E C T. III.

Of MEATS and DRINK.

A P H O R I S M I.

IF upon a full Stomach, the first Concoction is perfected during Sleep, for the most part about Forty Ounces will Perspire that Night: But if that Concoction is not made, hardly above Eighteen Ounces;

A P H. II.

Upon an empty Stomach, even in the time of Sleep, there does not Perspire above Eighteen Ounces.

E X P L A N A T I O N.

THE former makes it appear how necessary and serviceable Sleep is to a due Perspiration, (See *Aphor. XX. Sect. I.*) and the latter convinces us, by the Waste that is made, (although Fasting, notwithstanding it being so much less than upon a full Stomach) of the daily need we stand in of a large Supply from convenient Food.

Dr. *Lister* here takes occasion to observe, That Insects and such Creatures which require but very small Nourishment, have but a very slow Circulation of Blood and Juices: The

The Reason of which is very plain, for the greatest Motions always occasion the greatest Attritions, and the faster the Parts are broke and wore off, the more speedy and large must be the Supply: But in Insects the Motions of their Fluids are so very slow, that they wear but little, and consequently, they need but very little Nourishment. This likewise gives a very good Caution against straining the Constitution and wareing it out faster than need by immoderate Quantities of Spirituous Liquors, or violent Exercises, for both these, by accelerating the Motions of the Fluids occasion greater Wasts of the Solids, than the best Food will constantly repair.

A P H. III.

A full Stomach *without Digestion* Perspires as much as one that is fasting, or thereabout.

EXPLANATION.

This exactly agrees with the two former, and is almost the very same in other Words.

A P H. IV.

Very nourishing Meats, excepting *Mutton* between the time of Supper and Dinner, do not Perspire above Eighteen Ounces.

EXPLANATION.

The more nourishing Meats are, the less of them taken at a time will serve, and their easie Assimilation with the Animal Juices, and ready Entrance into the Substance of the Solids, necessarily lessens the Quantity to be perspired.

A P H. V.

A large Meal of small Nourishment in one Night, with a great many will Perspire Forty Ounces or more.

EXPLANATION.

By Meats of small Nourishment are not to be understood such as the meaner Sort of People take up with, or such as are disagreeable or ungrateful to the Stomach, for a great many of this Kind are quite the contrary, especially most Sorts of Fruit; but all such as are of a light dissolvable Texture, which are soon broke in the Stomach, and carried through the whole Circuit of the Fluids, in a lesser time than harder and more consistent Meats, and by that are rendered so very small as to fly off by insensible Perspiration. Several which follow are much to the same Purpose;

A P H. VI.

Such Food keeps the Body heaviest, as is fullest of Nourishment and Crudities.

A P H. VII.

Those Meats which the Body has been most accustomed to, and such as are in their own Natures most exhalable, will keep it lightest,

A P H. VIII.

Mutton easily digests and perspires: For it will waft in a Night the third Part of a Pound, more than other usual Food.

EXPLANATION.

Mutton therefore cannot but be a much more agreeable Diet in *Rheumatisms*, and all Cases where the Blood is weak and Siezy, than several Kinds of fresh Fish, which are often prescribed, upon a false Notion of their not being so feavourish as Meats. For although a Person may seem something hotter after a Flesh Meal, than after Fish, yet that Heat, especially if it be after *Mutton*, and Meats of an easie Digestion, is nothing else than an increased agitation of the Fluids, proceeding from brisker and stronger Pulsations of the Solids upon such fresh Recruit of Spirits; and its Consequences will only be, the breaking the *Lentor* or Viscidity of the Juices, and promoting Perspiration, whereas Fish and glutinous Meats, although indeed they raise no feavourish Heats, yet at the same time and for the same Reason they also afford but a very slender supply of Spirits to the Solids, whereby their Contractions are still kept weak, and the Viscidity of the Fluids rather increased than otherwise, and upon the same Account in the like Cases are the following to be chose.

A P H. IX.

Those Eatables which are made of fermented Past, do not render the Body heavy, for they Perspire much more easily than Roots.

A P H. X.

A Healthful Person perspires insensibly in the Space of one Day, as much as by Stool in two Weeks, although every Day in that time he has a consistent well-digested Stool.

EXPLANATION.

This agrees with the LIXth *Aphorism* of the first *Section* where the Discharges by *Stool* are computed to amount in the Space of one Day to *four Ounces*, by *Urine* to *sixteen Ounces*, and by insensible *Transpiration* to *forty Ounces*, and upwards ; and this well consider'd, cannot but suggest the most natural and effectual means to clear the Body of any Disorders, arising from an Obstruction of any of the Evacuations, but especially that of insensible *Transpiration* ; and likewise furnish us with a Theory whereby with certainty to account for all the Symptoms of such Disorders. Dr. *Pitcairne* as he applies this in his *Dissertatio, de Curatione Februm quæ per Evacuationes instituitur*, Reasons with so much strength and clearness thereupon, (allowing his Postulate, that the Morbid Matter may be equally drawn off by any Evacuation,) that I cannot perswade my self here to omit giving a short Abstract thereof ; whereby the Reader may not only be instructed in a better Notion of this Matter, but also convinced that *Physick*, when in the Hands of such who know the true ways of applying themselves thereto, is not meer *Guess-work* ; as a great many who would be thought too no mean Proficients therein, out of their abundant Humility are disposed to own ; but with Design only to depreciate what they find themselves not turned to understand.

That an Obstruction of Perspiration or any other Evacuation, so as to increase the Quantity of Blood thereby, will in Proportion to such an increase raise a Fever, has been accounted for and demonstrated under several of the foregoing *Aphorisms* ; Now whereas Perspiration is double, if not triple of all the other Evacuations taken together, an Obstruction of half or a third Part of the Perspirable Matter, will raise a Fever as great, as a suppression of all the other Evacuations together. And also whereas cuticular Discharge, is ten times greater than that by *Stool*, the Diminution of a tenth Part of it will raise a Fever as great as a total Retention of the Contents of the Guts. And for the same Reasons the increase of Perspiration by one half or a third Part, will goe as far towards the removal of a Fever, as an increase of all the other together ;

and the promotion of a tenth Part only, will goe as far, as the whole Discharge by Stool ; but an increase of its entire Quantity, will do as much, as ten times the usual Quantity by Stool. Further, whereas it appears, that the Matter of one Secretion, may be drawn away by the increase of another, and that any one Secretion may be enlarged in any given Proportion ; and also that all the Secretions may be so enlarged, as to keep the same Proportion to one another, as in a natural State, therefore a greater Quantity of an Overcharge may be drawn off in any given time by Perspiration, than by any other Discharge, in Proportion to the Quantity which cuticular Secretion bears in a natural State, to that of any other Discharge also in the like State.

From hence it follows that a Fever, or any other Distemper, cannot so expeditiously be removed by an increase of Discharges by Stool, as by the increase of cuticular Transpiration ; unless the increase of the former should be in an *inverted Proportion* to that of the latter, as they are to one another in a natural State, wherefore the Discharge by Stool ought to be a hundred times more than natural, to throw off as much in the Space of one Day, as the increase of Perspiration, only ten times beyond what is natural, would do in the same Space of time : That is to say, where a Person in a healthful State used to have one Stool, he must then have a hundred : And therefore he who has been accustomed to ten Stools a Day, if when Sick he is fond to be cured by that Discharge, it is necessary that he must have a Thousand in the same time.

From all this it appears that in a Fever, or indeed in any other Distemper, whose Cure is to be effected by Evacuation, that there is ten times a greater Probability of removing it by Sweat, than by Stool, and as a Physician always ought to fall in with that Method which carries with it the greatest hopes of Success, he will very rarely find a just Occasion to deviate from that of curing Fevers by the cuticular Discharges.

A P H. XI.

A full or an empty Stomach, lessens Perspiration, for a full one diverts it by a Corruption of the Aliment; and an empty one draws it back that it may be filled.

EXPLANATION.

This is very obscurely express'd, for by the full Stomach cannot be understood any other than one overcharged with a Meal, which it is not able to digest, but nauseates, if it does not throw it up again by Vomiting, and this must undoubtedly hinder Perspiration; for if its Contents pass into the Bowels, they will be so crude or gross, as very little to pass thorough the *Lacteals*, and therefore will mostly be thrown off by Stool, which consequently cuts off a Supply of the Perspirable Matter. This is likewise the Reason why an empty Stomach has the same Effect, in lessening Perspiration. The last Part, about the Attraction of an empty Stomach, in order to be filled, I do not understand.

A P H. XII.

When a full Meal is not perfectly digested, it is to be known by an increase of Weight; for the Body will not then perspire well: But an empty Stomach is filled with Vapours.

EXPLANATION.

Nothing is more plain and certain, than the former Part. The *Flatus* or Vapour which he says an empty Stomach is filled with, can be nothing else than the Matter of internal Perspiration there collected; for from *Aphorism V. Sect. I.* it appears, that all the internal Parts whatsoever do perspire thorough their respective Membranes or Coverings; therefore for the most Part, that which arises

from the *Viscera* of the lower Belly gets either into the Stomach and Guts, and when collected in any considerable Quantity provokes them to discharge it either upwards or downwards.

In several diseased Persons, especially those we call Hypocondriacks, this Matter acquires so much Acrimony or Sharpness, as to irritate and offend the Membranes very much, cause sharp Pains, and sometimes violent Cholicks; and this is the Reason why Riding and any brisk Exercises are always found of such mighty Service to these People, because it diverts the Perspirable Matter in greater Quantities by the outer Skin, which is not so tender and perceptible of those irritating and sometimes corrosive Steams. And it is very observable that such Persons, at those times they are freest from inward Complaints, are very subject to Rashes and cutaneous Eruptions; which is nothing else than the gross Acid Perspirable Matter, (that at other times used to get thorough the *Viscera* into the Cavities of the Belly and occasion the forementioned Disorders) drawn off by the outer Skin, and raising up the *Cuticula* in several Parts, as it passes; and sometimes abrading, and taring off the Extremities of the Ducts in such a manner, as occasions a continual pouring out of a visible Serum. And at this time, I know a Woman of a thin tender Constitution who is seldom free from Cholic Pains, especially upon taking a little Cold; but whensoever she escapes them two or three Weeks together, there never fails to break out upon her a troublesome Itching Humour, which if it continues out long, appears in several Places like Tetters, and ouzes out a Salt limpid Serum, all the time it keeps out she is easie, and whenever it disappears the old Pains are sure to return. Those wandering Pains likewise which some complain of so much about their Limbs, I cannot but think are owing very much to the same Causes. The Actions of the Muscles undoubtedly wear off and perspire a great deal through their respective Coats, which if it be digested and broke very small, by degrees gets thorough the Substance of the Parts and flies off *qua data porta*, but otherwise it may be confined and lodged in the Interstices of the Muscles, and by its Grossness or Acrimony, occasion those sharp and severe Pains that are felt in Rheumatisms, and if it be not by some means or other discharged,

in a short time either by an increase of its Quantity, or by the Derivation of a greater store of Juices to the irritated Part, (according to the *Bellinian Theory*) it raises considerable Swellings, and at last renders the affected Muscles incapable of Motion. I cannot but be perswaded, that from hence likewise may be deduced a very good *Rationale* of all the Symptoms and Changes, commonly attending what we usually call the *Vapours* and *Spleen*, but it will take up too much Room here. And this confirms the following

A P H. XIII.

A *Flatus* is nothing else but a gross Perspirable Matter.

A P H. XIV.

Robust Persons discharge their Food for the most part by Perspiration : Those not so strong by Urine, and the weak chiefly by an indigested Chyle.

EXPLANATION.

The first Part is plain from what has gone before, but some who are not strong enough to circulate it, and break it fine enough to pass it off that way, may yet digest it far enough to separate it in the Kidnies, and carry it away by Urine, even which those who are weak cannot do, the greatest Part going off by Stool, without ever getting into the *Lacteals*, and this is the Reason why the weakest Persons are the most Laxative, and discharge much more by Stool in Proportion to the other Evacuations than those who are strong.

A P H. XV.

If a Person eats no Supper and continues with an empty Stomach, it will hinder Perspiration, and the obstructed Matter will acquire a sharpness; whence the Body will be subject to distemper'd Heats.

EXPLANATION.

Perspiration will be hinder'd both for want of a Supply of Matter, and thorough the weakness of the Solids for want of Spirits; both which cannot but be the Consequences of long fasting: The Fluids also hereby will lose their due Texture and Consistence, and become thin and sharp; by which the Fibres will be too much irritated, and also by giving lesser Resistance to the compressive Force of the Vessels, the Arteries will be contracted oftner, the Motion of the Blood increased, and the Pulse quickned, and such kinds of Fevers produced, which are called *Hectick*. And therefore of Consequence,

A P H. XVI.

Such Fasting as reduces the Weight of the Body below its natural Standard, is bad.

A P H. XVII.

Why do any dye of Hunger, who have no want of Blood whilst living? Because the Blood crouding towards the Stomach, leaves the Heart empty.

EXPLANATION.

This is another Mistake owing to the ignorance of the Bloods Circulation; which has been since the time of *Sanctorius* discovered, otherwise he would without doubt have given another Guess Account of it. It can be no wonder why Persons may dye with Hunger, although well stock'd with Blood, to those who are at all acquainted with the Wast that is continually made by the Actions and Attritions of the several Parts of the Body, and that the Circulation of the Blood it self depends upon the contractile Force of the Heart and its Appendices the Arteries, and that such Contractions are owing to the Elasticity or Springyness of their constituent Fibres, which Elasticity is also preserved and maintain'd by the continual Supply of a convenient Juice, separated by, and communicated to them from the Brain, and therefore when such a Supply happens to be cut off, as it must needs be by the want of Food, the contractile Force of the Arteries necessarily abates, and consequently the Blood stagnates in them which is Death. Persons therefore by long Fasting do not dye, because the Blood has recourse to any particular Part, and so leaves the Heart empty; (as if the Blood was informed with an intelligent and wise forecast, and did not move as all inanimate Bodies do, by the Impulses only and Directions of external Causes) For immediately upon Death the Heart is as full of Blood as at any other time, altho' thick and stagnant.

A P H. XVIII.

It is not only the Quantity of undigested Food that renders the Body heavier, but also sometimes its Quality, when it is such as hinders Perspiration.

EXPLANATION.

That is, when it is such, as after it gets into the Blood cannot be broke enough to pass out at the cutaneous Pores, but by its Grossness or Viscidity obstructs the cappillary Vessels, whereby afterwards it hinders the Passage of such as is well digested.

A P H. XIX.

When a Person seems to himself lighter than he really is, it is a very good Sign: Because it arises from a perfect Digestion of all the Juices. See *Aphorism XXVIII. Section I.* with its *Explanation.*

A P H. XX.

When all the Day, when the Body remains lightsome and active, it is preceded by a perfect Digestion of the *Chyle* and Blood, and a clear Discharge of the Recrements of the third Concoction. Which is the *Materia Perspirabilis.*

A P H. XXI.

Indigested Food by how much the more Nourishment it contains, is so much the worse, because it occasions either a greater increase of Weight, or degenerates into a greater Corruption.

A P H. XXII.

The Body becomes lightest by the Corruption of Food, because the more liquid Excrements are of all much the heaviest.

EXPLANATION.

In the former *Aphorism*, the Corruption spoke of is to be understood chiefly that which happens in the Vessels, after the Food has past the *Lacteals*; but in the latter, that which is brought about in the Stomach, thorough indigestion, and always goes off with a *Diarrhœa*; by which means the Blood being defrauded of its due Supply, and the Quantity of the Perspirable Matter lessen'd by its being diverted another way, the Body cannot but be render'd lighter.

Meats of great Nourishment, are such whose constituent Parts are large, but their Textures and Combinations so weak, that they are soon broke in the Stomach small enough to get thorough the *Lacteals* into the Blood; where the compressive Force upon them being not strong enough to fit them for Perspiration, they remain longer in the Body, and consequently render it heavier.

DIGRESSION I.

Of Fermentation and Corruption, so far as they relate to the Animal Fluids.

IT may be necessary further also to explain what is to be understood, by the Corruption of any thing within the Body, and this is to be known by considering how this Change of a Parcel of Matter, which is called its Corruption, is brought about without it. It has been demonstrated, first by Sir Isaac Newton, and since more particularly with regard to the minute component Parts of lesser Bodies, by Dr. James Keil, of *Animal Secretion*, and Dr. Friend of Oxford, in his *Prælectiones Chymicae*, That all Bodies whatsoever attract and are attracted of one another ; by Virtue of which Power in any heterogeneous quiescent Fluid, there always will be an intestine Motion of its constituent Parts, whereby several Corpuscles will be generated *de Novo*, by the Cohæsions of Parts that were before separate, and others by their Attritions and Occursions one against another will have their Angles struck off, and upon that Account both loose their former Figures and Properties, and occasion the Production of a Set of new Particles, sometimes very different from what before existed in that Fluid : And this intestine Bustle will goe on until the several Parts have obtained such Positions, as perfectly correspond with their Specifick Gravities, and that they equally attract and are attracted by one another : And the Change a Fluid undergoes hereby is greater or lesser, according to the Attractive Powers of its component Parts ; which are sometimes so great as to raise a strong Fermentation and sometimes actual Fire, (although indeed every intestine Motion arising from these Causes, tho' in never so low a Degree may justly be call'd Fermentation) and sometimes also the Properties and Phases of Bodies are hereby so much alter'd, and in such a manner, as when they are said to be putrify'd, or corrupted.

Now this Intestine Motion of a Fluid, is prevented, in a great Measure at least, by the continual Agitation of its containing Vessels, or by its Propulsion, thorough Canals, especially such as are *Conical* and *Distractile*; in the first Case, the Motion of the containing Vessel, will communicate and impress such Motions upon the several Parts of the Fluid, as are contrary to the Directions of their Attractive Powers, and so destructive of their natural Cohæsions, as to cause those Particles frequently to recede from one another, which otherwise when left to obey their proper Attractions, would run into close Contacts with one another. And in the latter Case, although the Fluid be propell'd at its first setting out, in a Direction parallel to the Axis of the Canal, yet its *Conical* Figure will all the way give such Resistances to some of its Parts, which must necessarily strike against its Sides, as to deflect them from their first Directions, and thereby make such a continual shifting and changing of the Positions of the several Parts with Relation to one another, as is also inconsistent with those Cohæsions, as in obedience to their mutual Attractions they otherwise would be drawn into.

This being premised, it will easily appear, That as the constituent Parts of a Fluid cannot obey their respective Attractive Powers, when put into Motion by any external Cause, as when left at rest, so likewise that such external Force may be so proportion'd, as to allow of the Attractions and Cohæsions of some Parts, wherein that Power abounds, at the same time when it is yet considerable enough to prevent it in others, where that Power is more languid; and therefore that at the same time, some Parts of an agitated Fluid may so much obey their attractive Powers, as to induce amongst them the Changes above mention'd, more or less, as the Motions impressed upon them *ab extra*, are intended or remitted. That is, in short, That the Animal Fluids will more or less tend to Corruption or Putrefaction, according to the Degrees of Motion impressed upon them by their contractile Vessels.

To this Purpose it appears, That the three several kinds of Motion in the Blood, taken notice of by *Gulielmini* in his *Exercitatio de Sanguinis Natura & Constitutione*, Sect. VI, pag. 21. is very just and rational. His Distinctions of the several Motions are into what he calls Circular, agitative or confused, and fermentative: The first depends upon the Impulse it receives from the Contraction of the Heart, by which it is thrown out of its Ventricle into the Arteries, and by their reciprocal Contractions and Dilations, carried thorough its whole Circuit. The second is occasion'd by its different Resistances, for in the very same Section of an Artery, it moves swifter about the Axis, than near the Circumference, by the greater Resistances it meets with from the Sides of the Vessel, being more retarded there than in the middle. Whereupon it not only moves with unequal Velocities, but has some of its Parts also continually deflected from their first Directions, and thereby confusedly hurried along, sometimes at the Centre, and sometimes at the Sides. The third arises from the Causes before-mention'd, and is therefore greater or lesser, as the other increase or abate.

This Theory will easily Account, not only for the Contents of the two foregoing *Aphorisms*, but of a great many more likewise of this Section. See also *Explanat.* to *Aphorism XLVIII.* below, and hence without any Difficulty are deduceable the Reasons of that Corruption of the Food which frequently happens in the Stomach and Bowels, and occasions Vomitings and *Diarrhœas*, and likewise that which is brought about in the Vessels and Secretory Glands in such as are called Putrid Fevers: With a good *Rationale* also of their Symptoms and Cures. Hence too it appears why, according to the *XXIst Aphor.* Meats of the greatest Nourishment tend most to Corruption: Because they consisting of Parts gross, and not easily reduced fine enough for Perspiration, altho' divided from one another; upon which they are retained longer in the Body, and apt to obstruct the Capillary Vessels, and give such a Weight, and consequently a Retardation to the circulating Juices, as disposes them more to intestine and fermentative Motions, and bring them into State of Corruption or Putrefaction.

A P H. XXIII.

Pork and *Mushrooms* are bad, both because they do not Perspire themselves, and because they hinder the Perspiration of other things eat along with them.

A P H. XXIV.

Pork and *Mushrooms*, occasion the Body to perspire less than usual a third Part.

EXPLANATION.

Very gross and ill fed *Hogs-Flesh*, and *Mushrooms* ill managed, may have the Consequences herein mentioned. But common Experience proves, as they are generally ordered, they make very agreeable and wholsom Food, but the latter especially a good pleasant Sauce. Young well fed *Pork* affords excellent Nourishment, and with its usual Sawce, *Mustard*, even by weak Stomachs, digests and perspires well, where therefore there have been too large Evacuations, or Injuries received by long Fasting, 'tis very proper, especially if Care be taken to eat light Meals, and often: But very sparingly indeed ought it to be used by those who incline to err on the other Hand by too great a Fulness. See *Aphor. IV. and V. of this Section.*

A P H. XXV.

Melons Perspire so little, that they lessen the Quantity usually discharged by a fourth Part.

A P H. XXVI.

The Perspirable Matter retained by their Means generally goes off by Urine or Sweat.

EXPLANATION.

If it be understood here, that they goe off this way in such as are strong, the Reasons will appear from *Explanat.* to *Aphor. XIV.* of this *Sect.* For in a strong Person when such things get into the Blood which cannot be broke small enough for insensible Transpiration, they will yet be enough digested for Expulsion by Sensible Transpiration, which is Sweat, or by Urine.

A P H. XXVII.

New Currants or Raisins, and Figgs something lessen Perspiration, both of themselves and other Food: but it may be by increasing the sensible Evacuations.

A P H. XXVIII.

That Sort of Food best perspires, and affords the most suitable Nourishment, whose Weight is not perceived in the Belly.

EXPLANATION.

Because what is of a strong Contexure, gross, and hard of Digestion, will remain a long time in the Stomach and Guts, and occasion a sense of Weight and Uneasiness.

A P H. XXIX.

A plentiful Meal is more injurious to Persons of little Action, than those who exercise much: For in the unactive the Bowels will be more burthen'd, whereas by Exercise that Weight is removed.

EXPLANATION.

By the Advantages of Exercise, not only the present Meal will be better digested, by its assisting that Agitation and Compression of the Food, upon which Digestion depends, but also the Muscles and whole Nervous System, will be thereby harden'd and corroborated, so as at all times to perform the Animal Functions, with more Ease and Regularity, than in those who lead inactive and sedentary Lives.

A P H. XXX.

The Body best perspires with that Food, whose Fæces or Recrements, pass thorough the Guts hard and consistent.

EXPLANATION.

Because if Digestion is perfected in the first Passages, that is in the Stomach and Guts, it seldom happens but it goes on well to the last, until a due Quantity is prepared for Perspiration; and whereas when it so happens, the thinner Part of the Food must needs be taken up by the lacteal Veins and convey'd to the Blood; what remains for Expulsion by Stool cannot but be hard and consistent.

A P H. XXXI.

Chicken does not nourish even so much as *Lettice*, if such a Quantity of it be eaten, that it turns into thin corrupted Stools.

EXPLANATION.

For whatsoever is put into the Stomach, and a *Diarrhœa* immediately ensues from its Corruption there, it will all pass off by Stool, and thereby destroy the Body of its Nourishment; as has largely been explain'd already. It may therefore be so circumstanced that the most nourishing Food may sometimes afford a less supply to the Body, than that which in its self contains the least Nourishment.

A P H. XXXII.

By weighing it may be known, when Fasting will be of Service, and when not: It will be serviceable, when all the former Days Food is not thoroughly perspired; otherwise it will be hurtful.

A P H. XXXIII.

When the Body by Diet is reduced below its natural Standard, what Strength is lost thereby, is irreparable. That there is a greater and lesser Standard of Weight even in Health, appears already from the LXIVth *Aphor.* of the First Section, and from the XLth of this.

EXPLANATION.

This cannot be true, unless it be by too slender a Diet for a long time, until the Solids are destroy'd. For we often see Persons much reduced both by want of Food and Distempers, who recruit again, after great loss of Substance, and recover their former Strength.

A P H. XXXIV.

If it be known exactly how much Food is convenient for every Day, such a Person may easily preserve his Health and Strength to a great Age, as appears by the same *Aphorism.*

A P H. XXXV.

The Strength of Nature is much impaired by Eating at Supper sometimes four Pounds, at othes six.

E X P L A N A T I O N.

There is nothing more confirm'd by common Experience, than that the Body cannot be put out of its accustom'd way of living, even although such as is destructive to another Person, without receiving some Prejudice, and therefore it is not likely that it should be agreeable frequently to alter the Quantities of Food, but on the contrary it must be very hurtful, by sometimes over-loading the Solids, and at others, by not giving them sufficient Resistances, and thereby disturbing their wonted Contractions.

A P H. XXXVI.

That Quantity of Food is most healthful, when after Eating a Person is as lightsome and active, about any Labour, as when fasting.

E X P L A N A T I O N.

This is a very good and easie Rule for any one to observe, who would be careful of their Health.

A P H. XXXVII.

The Body is more burthen'd from eight Pounds taken in at one Meal a Day, than with ten Pounds in a Day, at three several Meals.

E X P L A N A T I O N.

Because the Stomach by too large a Meal is over-stretch'd and weaken'd, and therefore cannot discharge the same Quantity taken in at once, so easily by much, as it might if taken in at several times in such Quantities, as do not over-reach and destroy the Springs of its constituent Fibres.

A P H. XXXVIII.

That Quantity of Food to every one is most healthful ; which without any uneasiness can be perfectly digested : And that it is perfectly digested may be known by the Sum of the Evacuations answering the Quantities taken in ; which will appear by weighing.

A P H. XXXIX.

That Quantity of Food may at all times be ventured upon, which Nature is able to Concoct, Digest, and perspire.

EXPLANATION.

Concoction and Digestion are pretty much the same as to their Causes, and the manner by which they are effected, and differ in little else than in the Parts of the Body wherein each is brought about. By Concoction *Sanctorius* seems always to mean that Alteration which is made upon the Contents of the Stomach, by the Agitations and Attritions of its Coats; and by Digestion, that further Change which is made upon it when brought into the Blood, by the continual Contractions of the Arteries. The Recrements of the former are expell'd by Stool, and the latter by Perspiration.

A P H. XL.

If Nature is able to digest a hundred Pound Weight of Food, and that Quantity is abridged to Ninety nine Pound : The Body in time will be much injured by it.

EXPLANATION.

Because there will be a proportionate Decay of the Strength of the Solids, by the want of a full Supply of the *Liquidum Nervosum* into their constituent Fibres, and thereby a hastening of Diseases and Death.

A P H. XLI.

Good nutritious Juices promise a lasting State of Health, when the Quantity perspired, is in a mean between an Excess, and a Deficiency: The Excess is when after a good Meal over Night, the greatest Quantity perspired amounts for the most part to forty Ounces or thereabouts; and in a Deficiency to fourteen Ounces. Such ought therefore to be the Quantity of Food in order to arrive at an healthful old Age, that will bring the Quantity, which goes off by insensible Transpiration, to Twenty two Ounces.

EXPLANATION.

Compare this with *Aphor. LXIV. Sect. I.* wherein the Computation of the Quantity perspired something differs from what it is here.

A P H. XLII.

The Opinion of *Celsus*, That the Non-naturals ought sometimes to be used sparingly, and at others very liberally, is not safe for all Persons.

EXPLANATION.

Because such a way of living cannot but very much destroy that settled Standard of Weight, in which *Sanctorius* with a great deal of Reason, places a perfect Health. See *Aphorism XXXV. of this Section.*

A P H. XLIII.

A Body is reduced to its wonted Weight with much less trouble, by eating four Pounds at a Dinner, and the same Quantity again at Supper, than by taking in six Pounds at Dinner and two at Supper. See *Aph. XXXVII. Sect. III.* with its *Explanations.*

A P H. XLIV.

He destroys himself that eats once a Day besides his ordinary Meals, be it more or less.

EXPLANATION.

Because such a Practice supplies the Body, faster than it is able to digest the Food, and fit it for its proper Offices, and Evacuations.

A P H. XLV.

The Body will be rendered heavier by four Ounces of very nourishing Food ; as *Pork, Eels,* and all *fat Meats*, than by six Ounces of a slender Nourishment, as *Fish, Chickens, small Birds,* and others of the like Kind.

EXPLANATION.

Because that which is very nourishing remains longer in the Body, as has been already proved, and is not so soon fitted for Perspiration.

A P H. XLVI.

Meats of a slender Nourishment, if they digest with difficulty, it is in the first Concoction only ; but with those which are very nourishing it is thorough all of them.

EXPLANATION.

Those things which afford but a small Nourishment, if they are not well digested in the Stomach, which is called the first Concoction, they pass away by Stool being too gross and solid to enter the *Lacteals* ; but those Meats of a more plentiful Nourishment, altho' they are not well digested in the Stomach, yet they are yielding and fine enough, a great Part at least, to get thorough the *Lacteals*, and so mix with the Blood ; and the Attrition, or digestive Power being not so great there as in the Stomach, they will remain not perfectly digested thorough all the Circulations ; and therefore in weak People such Food ought to be Eat the oftener, and less at a time.

A P H.

A P H. XLVII.

Food of very small Nourishment, cools and loosens the Bowels, is soon digested, and assists Perspiration both in Sleep, and waking.

EXPLANATION.

Such Food for the Reasons before given, carries but a small Quantity into the Blood, and that very fine, and what quickly flies off by Perspiration; and therefore the greater Part of it remains in the Guts, and cools them by keeping them moist, and also affords a greater Supply to the Discharges by Stool, and must be for these Reasons likewise most suitable after long Fevers, or any Distempers where there has been a considerable Waste made of Strength and Substance.

A P H. XLVIII.

Food of much Nourishment is binding unless it corrupts; it is difficultly digested, and perspires but little.

EXPLANATION.

Food of much Nourishment is binding, only as it passes in greater Quantities into the Blood, and thereby leaves the less to be discharged by Stool; that is, a Person goes less to Stool with such Food, than at other times.

By Corruption is meant, such a State of Putrefaction as is acquir'd by Fermentation, as explain'd under *Aphorism XXII.* of this Section, which see. Now those Meats of great Nourishment, abound with very active Particles, that is, with Particles that strongly attract one another, which if they cannot be prevented in their Cohæsions, and alter'd by the Juices of the Stomach, will mutually attract and act upon one another as in a Fermenting Body, and consequently tend to Corruption, and the Production of Corpuscles *de Novo*, of different Figures, Gravities, and Dispositions, from what before existed therein; and by this means they may become Purgative, both as *Stimuli*, and as by their Quantity, (little or none getting thorough the *Lacteal Vessels*) they must of necessity, by the Peristaltick Motion of the Intestines, be thrown off by Stool.

A P H. XLIX.

Where there is a Difficulty of Digestion, there Perspiration is slow.

EXPLANATION.

Because the Matter to be perspired, is broke small enough and fitted so to pass off by a previous Digestion, that is by the Agitations and Attritions it undergoes in the circulating Vessels; and therefore it is impossible but that the Quantity which is wasted by insensible Transpiration, should both increase and decrease, in proportion to that which is prepared and supply'd by previous Digestion, unless when by some Cause the cutaneous Passages are straighten'd, whereby the Perspirable Matter, altho' otherwise digested enough to get thorough, has not room to pass off.

A P H. L.

That Food ought to pass first, not as it is a Fluid, but as it contains a lesser Nourishment, for the *Pylorus* is not as in a Dog at the bottom of the Stomach.

EXPLANATION.

That is, to pass out of the *Stomach* into the Guts, which by its Situation and Make in Men, favours the Passage of the better Juices first, because by its being higher at the further Orifice, which is called the *Pylorus*, than in the middle, the lightest and most dissolvable Parts, which are the most nourishing, are thrown over first.

A P H. LI.

There are three Inconveniencies arise from a Variety of Meats; Eating too much, Digesting too little, and not Perspiring enough.

A P H. LII.

The time of least Perspiration, is when the Stomach is full, especially if it be so with a Variety of Meats.

E X P L A N A T I O N.

If the Contents of the two preceding are true, as there is sufficient Reason from what has been already said, to believe so, *viz.* That several kinds of Food taken in at one Meal hinder Perspiration, they are in a much happier Condition, as to their Health, who can be satisfy'd with a Meal upon one Joint of Meat, than those who riot in Luxurious Varieties.

A P H. LIII.

Whosoever Vomits up his Supper, looses the uneasiness at his Stomach, but the next Morning his Body will seem heavier: For Vomiting diverts the Perspirable Matter inward; which if it be acrimonious will occasion Lassitude and Heats, but if it offends only in Quantity, a greater Weight.

E X P L A N A T I O N.

Both the Proposition here and the Reasons for it are not true without considerable Restriction. For Vomiting in most Cases promotes Perspiration, as has already been proved, by the forceable Motions it gives to all the Muscles, thereby breaking that Viscidity of the Fluids, which before hinder'd it; therefore whensoever Vomiting has the Effects here mention'd, of rendering the Body heavier, it must either be by its long and frequent Repetitions, or by its throwing up the Supplies of a good Meal, when the Body stood much in want of it; for in both these Cases the Spirits will be exhausted, and the Elasticity of the Solids depending thereupon, very much destroy'd; upon which Account the Body will seem heavier, but not really be so, because there can be no absolute increase of Weight, but only a decay of Strength, which produces the same Sense of Weight. See this more largely explained *Aphorism XXVIII, XXIX. Sect. I.* By the LIVth *Aphorism* of the First *Sect.* Indeed it appears that Vomiting hinders Perspiration; but then it is to be understood only, as one Evacuation always hinders another, that is by diverting or drawing off another way, that Matter which should supply

ply it; and therefore by this, although Perspiration is less'd, yet the Body is not e're the heavier thereby, because in Proportion to the Decrease of the Quantity Perspired, some other Evacuation is enlarg'd. When Heat follows upon such Vomiting, it is not by any Acrimony of the Perspirable Matter, but arises from these Motions and Agitations of the Fluids, which they are necessarily put into by such strong Compression and Exercise of the Muscles; that the Heat of the Body arises from such Causes; I see *Aphor. LXVIII. Sect. I.* That Lassitude which also ensues, is only from cutting off a Supply of Spirits, as is above explained.

A P H. LIV.

He who Eats more than he ought, suffers in the necessary Quantity of Nourishment.

EXPLANATION:

How too large a Meal burthens the Stomach and hinders Digestion. See *Aphor. XXXVII. of this Section.*

A P H. LV.

They who are used to immoderate Eating when young, stretch the Stomach too much, by which means afterwards they come to digest with great Difficulty, even a moderate Quantity.

EXPLANATION.

Temperance in Eating and drinking is good at all times, but especially while young, because Irregularities and Excesses therein, and early Debauches so much destroy the natural Constitution and Strength of the *Viscera*, by the weakning of their Springs, that they cannot long be able to discharge their proper Functions, and therefore if they do not bring Fevers and immediate Death, they never fail to hasten on a Diseased old Age.

A P H. LVI.

He who would be settled in a stated and moderate way of living, must use Meats of light Nourishment ; by which the Stomach will soon be emptied, and return to its most natural and contracted Capacity.

EXPLANATION.

While the Stomach is full, upon Eating a large Meal, it is in a State of Distension much greater than when empty, and all the Fibres of which its Coats are composed, are upon a stretch much greater than what is natural to them ; in which State if they be kept too long, like a Bow too long and overmuch bent, they will loose their Springs, and not be able any longer to perform their Offices. Such Meats therefore must be most likely to preserve a healthful Constitution, which are most easily digested, and pass out of the Stomach soonest.

A P H. LVII.

It may be known how much is convenient to Eat, by observing several Days together, whether the Body returns to the same Standard after Sleep without any uneasiness.

EXPLANATION.

Because waking cheerful and lightsome, is an infallible Sign, that whatsoever is taken in is well digested, and converted to the several Purposes which the Exigences of the Constitution require ; whereby the Body is not only kept cleared of any superfluous Load, but also every Wheel of the Machine is preserved fit for Motion.

A P H. LVIII.

If after a plentiful Supper a Body the Day following is lighter than usual, it becomes so either by a Corruption of the Chyle, or because Nature has been irritated to expel what is useful, which is very injurious: For there cannot but be some Dispositions towards a Distemper, when what is useful is evacuated, and Crudities are detained.

A P H. LIX.

If a Supper of eight Pounds corrupts in the Stomach, the next Day the Body will be lighter than after a Supper of three Pound, which does not do so.

EXPLANATION.

By Corruption of the Food in the Stomach and Bowels, and the Consequences of it, especially in occasioning *Diarrhæas*, is to be understood that Change which it undergoes by an intestine or fermentative Motion, which see largely explained under *Aphor. XXII, XLVIII* of this *Section*.

A P H. LX.

Those Meats which are more suitable for Perspiration, do not corrupt, and even upon Nocturnal watchings will preserve a Person from Heaviness and Weariness.

EXPLANATION.

Because from a very good digested Meal, the Solids will be invigorated by such a plentiful Stock of Spirits, as to be able to continue their respective Offices a considerable time without Decay, although Sleep itself which is so serviceable to that Purpose be for a while wanting.

A P H. LXI.

Food which does not perspire, occasions Obstructions, Putrefactions, Lassitudes, Sadness, and an Increase of Weight.

EXPLANATION.

The Reason of all which may easily be collected from what has been said before, under *Aphor.* XLIV, XLV. *Sect.* I. compar'd with several others.

A P H. LXII.

The worst Condition a Person can be in, is when upon a good Digestion, the Body seems heavier, and in reality it is lighter than usual.

EXPLANATION.

This is a Case that I think can never happen, for a good Digestion is not possible to be performed without Strength and Vigour in the Solids ; and such Strength depends upon a due Supply of convenient Juices to them ; and therefore where there is a good Digestion, as herein is supposed, the Body can never be in any bad Condition ; unless from some sudden Accident from an external Cause.

A P H. LXIII.

If any one takes in a superfluity of Meat or Drink, and the sensible Evacuations increase thereupon, the Body the following Day will be lighter than usual.

EXPLANATION.

Because by those Evacuations it is a great Chance if a great deal more is not carried off than ought to be, by which the Body will not only be render'd lighter, but also much weaker, by being defrauded of its necessary Recruits?

A P H. LXIV.

The Liquid Food is Specifically heavier than that which is Solid : For it keeps at the Bottom, but the Solid swims. A Cup of Wine or Broath is much heavier than Bread.

EXPLANATION.

After the Food is diluted, mixed with the Juices of the Stomach, and converted into Chyle, it matters not much what form it was in before it came there, and it is not true universally, that the Liquid Food is specifically heaviest, for a great many solid Meats are heavier than some Liquids. This *Aphorism* is much the same as the XXVIIIth Sect. I.

A P H. LXV.

If too much Drink makes the Eyes watery after Sleep, it is a sign the Body has not sufficiently perspired.

EXPLANATION.

An Overcharge of Spirituous Liquors does frequently so much increase the Bloods Motion and Force, as to carry some of the Juices thorough Passages not design'd for them, and make undue Secretions even when there is no Diminution of Perspiration : But when Perspiration is hinder'd or any other Evacuation, if the Solids preserve their Strength, the detained Matter Nature never fails to throw off by some other Outlets, wherein the Glands about the Eyes may have their share.

A P H. LXVI.

If after hard Drinking a Person sweats much, or makes much Urine ; it is a sign of great Strength or great Weakness.

EXPLANATION.

In this Case those Evacuations may be owing to either the forceable and frequent Contractions of the Solids in strong Persons, whereby they throw off the superfluous Load, or to their relaxed State in weak People, by which they yield to its Discharge thorough the same Passages upon the smallest increase of Impulse ; but the Consequences will be very different, for the former will afterwards be lightsome, and receive little or no Injury, provided it be not repeated too often, so as to wear out the Elasticity of the Solids, whereas the latter, will be long disorder'd, the weakness of the Solids retarding their Recovery.

A P H. LXVII.

Water Drinking hinders insensible Perspiration, but promotes the Sensible Evacuations.

EXPLANATION.

Long Courses therefore of the Mineral Waters, especially the *Chalybeate*, cannot but be very injurious in several Constitutions, by disordering and diverting so necessary an Evacuation. A few Repetitions of them in some Cases may be of great Service, but in the best Constitution in the World a long use will too much wear those Passages by which they are accustomed to go off, and render it very difficult to bring those Evacuations afterward to their natural and proper Quantities. Those Discharges likewise which have been diminished during such Causes, will with Difficulty be recovered, the secretory Organs by disuse, subsiding and loosing their proper Capacities.

A P H. LXVIII.

The customary Drinking, even amongst temperate Persons in this Age is ill proportioned, for to about Twelve Ounces of Meat, they drink Forty Ounces or more.

EXPLANATION.

A great many very strange Habits and Appetites are acquired by ill Custom, which Nature was never the Author of, but nothing worse than frequent Tipling. Experience teaches us, that a great many who have been so happy as to keep their Appetites undebauch'd, can and do enjoy a perfect Health, without ever drinking but at Meals, and then too but very sparingly, and are never at other times thirsty or desirous of Drink. Mr. *Locke* in his *Thoughts of Education*, very much blames the Custom of giving Children Drink often as a Lullaby when froward, because in time it brings on an habitual Thirst, and he says that he once lived in a House where there was a young Child that could not talk, that drank more Liquor in the Space of four and twenty Hours than himself, and this ill Practice he fears

fears is a dangerous beginning and preparation for good Fellowship. It is possible indeed to err on the other hand, by not drinking a sufficiency to dilute the solid Food in the Stomach, but there are few of this number, and the greatest Danger to the Constitution is from the other Extream ; for nothing is more certain, than by how much the more is taken in, than is sufficient for the Exigencies of Nature, by so much the sooner will the Body be wore out ; because by such means all the secretory Organs, are more and faster wore away than is needful, and the Elasticity of all the Solids sooner decays ; just as it happens in the Wheels and Springs of any Machine, the greater Stress is laid upon one, and the faster the others move, the sooner it necessarily wears out, and loses all its Power of Motion.

A P H. LXIX.

A temperate Liver generally perspires in a Night three Pound : And such a one, if he be of a strong Constitution, after a plentiful Meal may perspire five Pound.

A P H. LXX.

Fasting is beneficial to a heavy full Body, to a temperate one hurtful, but most of all so, to one that is weak.

E X P L A N A T I O N .

By a heavy full Body is to be understood, such a one as has not for some time evacuated in Proportion to the Quantities taken in, whereupon there has arisen a *Plethora*, and in such a Case nothing can be of greater Service, so its continuance has not been long enough to alter the natural Qualities of the Fluids, than Abstinence, and a very slender Diet, because by such a way of living will soon be subtracted the Overcharge, and the Body reduced again to its wonted Standard. But Abstinence in a Person not so overcharged, cannot but bring the Body below its healthful Standard, and therefore must needs be hurtful, but more especially to a weak Constitution, because such a one will with the greatest Difficulty recover its Loss.

A P H. LXXI.

A plentiful Meal after long fasting will increase Perspiration a Pound more than usual.

EXPLANATION.

But this must be in very robust Constitutions where the Solids are very strong, otherwise such a plentiful feeding would over-reach the Fibres of the Stomach, and disable them for those necessary Contractions upon which Digestion depends, and thereby the Body would be less nourished, than from a light Meal, and therefore a lesser Supply afforded for the cuticular Discharges.

A P H. LXXII.

After immoderate Exercise, to feed very plentifully is not good: Because a weary Body perspires with Difficulty.

EXPLANATION.

This also confirms what is said under the former *Aphorism*, such Exercise strains and weakens the Solids, insomuch that they are not able afterwards to repeat their Contractions with that Strength and Quickness, as is necessary to circulate and digest a full Meal as it ought to be, to render it suitable, either for the Occasions of the Oeconomy, or Perspiration, and therefore must needs lessen the Quantity to be discharged that way. By immoderate Exercise also the Vessels will be so much emptied, as to occasion a quicker Derivation of a fresh Supply, than is consistent with its due Digestion, and thereby the *Capillaries* will be fill'd with a Viscid gross Matter, which will hinder Perspiration. See under *Aphorism XLIV. Sect. I.*

A P H. LXXIII.

When sober and temperate People go off with sudden Sickness; it is much wonder'd at by their Friends, because they have no Notion of Insensible Perspiration.

EXPLANATION.

I very much question, whether any Disease arising from an Obstruction of Perspiration, suddenly kills, for it is plain that this Discharge may be considerably disturbed, without being attended with such fatal Consequences; and also that it never is put out of order without giving sufficient notice by a great many uneasinesses and ill Symptoms. By sudden Sicknes, therefore is not to be understood Convulsions and Apoplexies, but acute Fevers, which most frequently arise from an obstructed Perspiration, and sometimes have their Rise and Periods in a few Days.

A P H. LXXIV.

High Feeding and Drinking for some time conceals not only the Acrimony of the obstructed Perspirable Matter, but even the Distempers of some of the less considerable Parts; which as soon as Persons come to use Purges or Abstinence, suddenly break out, and discover very ill Symptoms.

EXPLANATION.

Such a way of Living keeps up a continual Stock of Spirits, and heats the whole Body in such a manner, that there is little Room afforded for cool Reflexion; and the Mind is either in such a perpetual hurry, or stupidity, that it is render'd incapable of attending to, or being affected by what passes in the Body; but as soon as the Body is cool'd, either by Evacuations or Abstinence, and the Mind recovers its Capacity of Reflexion, those Grievances which were before not at all taken notice of, will give a great deal of Pain and Uneasiness. It is not therefore so much a wonder that a Person who has been long accustomed to such a way of Living, is so difficult to be reformed, because the Repetitions of his Bottles are like so many Doses of *Opium*, and as he ceases to be a Sor, he grows miserable.

A P H. LXXV.

That Physician who has the Care of the Health of *Princes*, and knows not what they daily perspire, deceives them, and will never be able to cure them, unless by Accident. This is the same as *Aph. II. Sect. I.*

A P H. LXXVI.

In the four first Hours after Eating, a great many perspire a Pound or near ; and after that to the ninth, two Pound ; and from the ninth to the sixteenth, scarce a Pound. Compare this with the LVith *Aphor. Sect. I.*

A P H. LXXVII.

That is the most proper time of Eating, wherein the Body comes to some Healthful Standard, as it enjoyed the Day before, when empty : But that *Apollo* himself cannot find out, without the Balance.

E X P L A N A T I O N.

That is, there is no way of knowing with certainty when the Body comes exactly to such a Weight, without bringing it to a Tryal by the Ballance. But I believe it will be thought an Experiment too troublesome to put in Practice ; and a Person studious and observing may exactly enough collect when that time is, which is most proper to eat in, by its present Plight, without any trouble of weighing himself : And if the Experiment should be once try'd. and the times of Eating settled accordingly, it is a great Chance but some Accident or other may make it convenient to alter them by the very next Day.

A P H. LXXVIII.

If a Debauch over Night proves Injurious, and can neither be well digested nor thrown off by a Looseness, the Advice of the following Verses is good.

*Si nocturna tibi noceat Potatio Vini,
Hoc tu mane bibas iterum, & fuerit Medicina.*

If over Nights Debauch does hurtful prove,
A Glas next Morning will your Pains remove.

EXPLANATION.

Too large a Quantity of Spirituous Liquors, stimulate the Solids so much while they remain in the Body, that as soon as their Strength is spent the Solids become weaker than before, and so much that very often they will not be able to throw off those grosser and more Viscid Parts of the Liquor, which always remain to the last, without the assistance next Day of a moderate Quantity of the same, whereby the Remains of the former may still be agitated and kept in Motion, until by Degrees it is carried away by some of the Evacuations.

A P H. LXXIX.

If the Weight of a healthful Body after Supper, be two Hundred Pound, and that Body be afterwards weaken'd by too much Venery, its Weight will then not exceed, a hundred and ninety eight Pound. Because the *Languor at that time contracted*, will lessen the Quantity of Food usually converted into Nourishment, by two Pounds.

EXPLANATION.

This properly belongs to the Sixth Section, which see.

A P H. LXXX.

Meats that are easily perspirable, more easily, and with much less difficulty and trouble recruit the decay'd Strength, than such as are hard to perspire, and of gross Nourishment.

EXPLANATION.

The Difference between Meats which easily perspire, and such as are very nourishing, has in several Places been taken notice of already, from which it may be concluded that they commit a great Error, who give to weak and decay'd Persons, those things which are generally received to be of the most substantial Nourishment, as *Panadoes* much boil'd, *Chocolate*, *Milk*, and other thick Glutinous Spoon-Meats, for such, although they contain a great deal of Nourishment,

rishment, yet upon that very Account they require much more Strength and Vigour in the Solids to digest them, and intimately mix them with the Animal Juices, than a great many kinds of Food which in themselves are not so nourishing. And from what has been said before of *Mutton*, and our common Experience about it, it seems very probable, to be the most safe and agreeable Food in any extraordinary decay and waste of Strength, where there is no Danger of raising a Fever.

A P H. LXXXI.

Any turbid new Liquor if it digest in the Stomach, it will not only perspire well it self, but also assist the Perspiration of other Meats : Of this Kind also are hot flatulent Liquors.

E X P L A N A T I O N.

The Reason why such Liquors help Perspiration is, because, if they are well mix'd with the Stomachick Juices and the other Food, they pass with it thorough the *Lacteals*, and make Part of the Animal Fluids, which, by their aptitude to Fermentation, as it is well known all such Liquors have, they very much assist in their Motions, and continually by their Activity help to divide and break them in such a manner, as is necessary to fit them to pass that way. It is also to the same Activity and Dispositions of their constituent Parts that the following,

A P H. LXXXII.

Onions, Garlick, Mutton, Pheasants, but above all, *Cyrenaick Juice*, assist the Perspiration of such Meats, as in themselves are not easily perspirable.

APHORISMS *added by the* AUTHOR.

A P H. LXXXIII.

A very small Portion of Meat, is not perceivable in the Stomach; and therefore it neither digests, nor nourishes, nor perspires.

EXPLANATION.

It must be understood here after long fasting, and when the Stomach is thereby very much weaken'd, whereupon a small Quantity taken in at a time has not Spirit and Warmth sufficient to invigorate its Fibres, but lies useless and undigested.

A P H. LXXXIV.

The Matter of insensible Perspiration is the Excrement of the third Concoction: And therefore if the first is not made, the third also will be wanting.

EXPLANATION.

If the Food passes the Stomach without due Digestion, which is called the first Concoction, so much of it as gets into the Blood, by its Grossness and Crudity will of Course hinder the rest of the Secretions, by preventing the due Attritions and Secretions of such Parts as are necessary thereunto, being in themselves too solid and bulky to be broke by the Force of the Arteries.

A P H. LXXXVI.

By obstinate Fasting, the Head will be filled ; the Temples heated ; the Hypochondres distended, and the Arms and Legs enervated.

E X P L A N A T I O N.

To account fully and clearly for all those Symptoms will necessarily go into a great Length, because they are not to be understood without a considerable Acquaintance with the Mechanical Constructure and Oeconomy of the Body. It is necessary therefore to premise, that in the Body there are two chief Springs or Principal Instruments of Motion, *viz.* The *Dura Mater*, and the *Heart*, They both agree in this, that by alternate Dilatations and Contractions, they take in and throw out again certain Fluids, which by the Vessels or Pipes annexed to them are convey'd to all Parts of the Body. One of the Fluids is the Blood, and belongs to the Office of the *Heart*, and its Appendices the Arteries : The other is the *Succus Nervosus*, or what is commonly called the *Animal Spirits*, which has its Motion and the Continuance of it into all the Parts, from the Alternate Pulsations of the *Dura Mater*, and the Tonick Motion of the whole nervous System.

Now the Motions or Powers of these two chief Wheels or Springs of the Machine, have a mutual Dependence and Influence upon each other. That of the *Heart* upon a due Influx of the nervous Juice or *Animal Spirits*, separated from the Blood in the *Brain*, and brought to it by the Contractile force of the *Dura Mater*, thorough its annexed Nerves : For without this and a continual Supply of it, all the Muscles of the Body, lose their Springyness and grow uncapable of Motion. And as the Motion of the *Heart* thus depends upon a due Influx from the *Brain*, so that of the *Dura Mater* depends upon a due Circulation of Blood through the *Brain*, because from it is separated and deriv'd that Juice or *Animal Spirit*, upon which both its own, and the Motions of all the Solids depend : So that whichever of these Parts is injured, and thereby the Motions of their respective Fluids disturbed, the other of necessity must also

suffer thereby. For a more large Account of this, consult carefully *Baglivi de Fibra motrice & Morbosa*.

Thus far being once settled, it will then easily appear that by obstinate Fasting, first the Blood will be lessen'd in Quantity, next the Secrerions made from it lessen'd, and lastly the Solids will lose their Springs and Power of Motion. But whereas the contractile Force of the Solids may continue by the help of their present Stock of *Spirits*, sometime after the Blood becomes defrauded of its Supply, the Velocity of the Blood will be increased, as long as that Stock remains ; for lessening the Resistances of a moving Body is the same, as adding to its motive Powers ; upon which Account the Blood will be thrown more forceably into the extream Parts, amongst which the Head for a while will have its share. Now this Encrease of the Velocity of the Blood will while it continues, quicken and raise the Pulse universally throughout the Arteries ; but as in some Parts more than others, there is greater Room for their Expansion, which makes what we call the Pulse ; so in the Temporal Arteries, they being more straightned by the circumambient Parts, there will be a greater sense of that Pulsation, than any where else ; as it occasions a greater Uneasiness, and as the Stroak is chiefly to be felt externally, upon applying the Finger to the Artery. But it not being possible for this Additional Encrease of the Bloods Motion to continue long, after the supply of the nervous Fluid, and the Invigoration of the Solids is cut off, as soon as the present Stock decays, the whole Constitution must suffer, and not only a greater sense of Weight will be felt in the Head, but all over, and for the same Reason are the Limbs enervated, and lose their Strength.

The Distention of the Parts about the Belly, is occasioned by the Diversion of a great deal of the perspirable Matter, that would otherwise have passed the outer Skin, by the way of the *Viscera* ; for that Emptiness and Defection of *Spirits*, first from within very much takes off the *Vis à tergo*, by which those Steams were usually propell'd towards the Circumference, and gives thereby greater Liberty for them to collect themselves within, by which the Hypochondres are necessarily distended in an unusual manner. Hence may further be observ'd the Reason why a great Distance between the times of Eating is bad, especially

ally between Supper and Breakfast ; and that for such who are troubled as they call it with Wind, it is much better to Eat little and often, than large Meals and seldom.

A P H. LXXXVIII.

The Loss which a Body suffers for want of Food, is greater than by a Purgative Medicine ; because, this indeed promotes sensible Evacuation, but it lessens insensible Perspiration.

E X P L A N A T I O N.

As Perspiration is the most considerable Evacuation, so whatsoever lessens it, although at the same time some of the Sensible Evacuations are thereby increased, will keep up at least, if not increase the Weight of the Body, so long as the proper Quantities are taken in ; but where that is united, without any sensible Evacuation, the Body cannot but very much fall off both of its Bulk and Strength.

A P H. LXXXVII.

In a cold Constitution, where the Stomach is empty, thorough the omission of a Supper over Night, the next Morning drying and over-dress'd Meats are very serviceable.

E X P L A N A T I O N.

For in such Constitutions, at such times, the Stomach cannot but be nauseated by the Quantity and Acidity of its own Juices continually draining into it, and frequently also inflated with an overcharge of rancid Steams, arising from inward Perspiration, both which all drying things, as all over-dressed Meats more especially are, very much help to absorb and disperse, and if a plentiful use of Coffee is ever good, it must be so with these kind of Constitutions in a Morning.

A P H. LXXXVIII.

If one Meal a Day of about four Pound proves injurious, the same Quantity taken in two or three Meals, may be of service : For too great a Fulness of the Belly diverts Perspiration. See *Aphorism* XXXVII, XL, and XLIII of this *Section*.

A P H. LXXXIX.

They need not fear any Distemper, who diligently take care that they be not overcharged with Crudities.

EXPLANATION.

Any one who sets a due Value upon his Health, will study Temperance, and observe what is most agreeable to his Constitution, which will prevent any Crudities or undigested Matter from increasing in his Body ; but if by any external unavoidable Cause, as the hinderance of Perspiration by some ill Disposition of the external Air, an Obstruction shou'd happen, it will discover it self early enough to be remedy'd in time, and therefore no Danger of a Distemper need be feared where such due Care is taken.

A P H. XC.

It is better for Ancient People to eat three times a Day, as *Antiochus* did, than but twice, or but once, because the last hinders Perspiration. See *Aph.* LXXXVIII. above.

A P H. XCI.

Why would not *Antiochus* eat Fish at Supper ? Because they hinder'd Perspiration, for that which is made in the time of Sleep is most of Service, and without it the Strength languishes.

EXPLANATION.

Concerning the Inconveniences of a Fish-Diet, See *Explanation Aphor. VIII. Sect. III.* and for the Reason of the latter Part. *Aphorism XX, XXI. Section I.*

A P H. XCII.

The Juice of *Cucumbers* by its Coldness and Grossness remains in the Veins: And several other impure Juices, although easie to digest, by hindering Perspiration, occasion malignant Fevers.

EXPLANATION.

Common Experience teaches us that most kinds of Fish are prejudicial in all such Distempers as have their Rise chiefly from a Stickness and Viscidity of the Juices, as in Agues and Rheumatisms, and are most commonly occasioned by Obstructions of Perspiration; and as such things which hinder Perspiration, at all times are bad; so they are certainly worst of all at Supper, because in the time of Sleep, the Body receives the greatest Benefit by that Discharge. *Cucumbers* and several other things abounding with cold Viscid Juices, are also hurtful much in the same manner, by thickning and bringing a *Lentor* upon the Animal Juices, and thereby obstructing the perspirable Matter, which in time will acquire very noxious Qualities, sooner or later, as the present constitution of the Air, more or less favours its Corruption, and occasion putrid and malignant Fevers.

A P H. XCIII.

Why does a Putrefaction of the Food occasion a Lassitude ? Because it hinders Perspiration : But how ? By causing a *Diarrhœa* : How does a *Diarrhœa* occasion a Lassitude ? By carrying off with the Excrements a great deal of the useful and well digested Juices.

EXPLANATION.

This contains what has been said, and largely explained under several of the foregoing *Aphorisms* concerning a Putrefaction or Corruption of the Food. See *Aphor. XXII, Section III.*

A P H. XCIV.

He who eats a plentiful Supper upon a weariness, as soon as he sleeps will perceive a Coldness and Lassitude : But about twelve Hours after Supper, all will be well : Because by that time Digestion will be perfected, and Perspiration serviceable.

EXPLANATION.

Nothing is more common than a Chylliness and Listlessness to Action after a large Meal ; the Reason is both because the Remains of a former Meal in the *Lacteals* and *Receptaculum Chyli*, is suddenly thrust forward thereby into the Blood ; and because the additional Weight, and Pressure of the Contents of the Stomach upon the Blood-Vessels, there is some small Check given to the Motion of the Blood, upon which arises a sense of Cold ; for the Heat of the Body, as was proved before, is always as the Velocities of the circulating Fluids, and therefore whatsoever retards their Motions, makes the Body by so much the colder. The Rigors and Shudderings also which People are frequently sensible of af-

ter a plentiful Repast, are owing to the more contracted State of the Fibres : For the Capacity of the Stomach being much enlarged, the Nerves of the whole Body by the Communication of one Part with another, will be drawn thereby something straighter, which, in strong People especially, cannot be done without some Resistance, whereby there will be occasioned those short tremulous Vibrations of the Fibres, and whensoever a plentiful Meal is eat upon great emptiness of the Vessels, as after long fasting or hard Exercise, these Effects are more perceivable than at other times, because the new made Chyle, which is always more viscid than the Blood, sooner gets into the Arteries : Wherein by a good Constitution after a few Hours it will be sufficiently broke, and Digestion will be perfected, and Perspiration made in due Quantity, upon which the Body will soon be recruited with a fresh Stock of Spirits and Nourishment, and again return to its usual Standard of Weight.

A P H. XCV.

Food after violent Exercise is hurtful, both because it is not well received in the Stomach, and because it hinders Perspiration.

A P H. XCVI.

He who eats with a troubled Mind, digests much less, than one who is easie and chearful.

EXPLANATION.

Nothing is more certain, than that the Passions of the Mind, have a great Influence upon the Animal Functions, concerning which, See further, *Sect. VII.*

A P H. XCVII.

To Drink between Dinner and Supper is hurtful: But if we drink so much the less for it at Supper, its Inconveniencies will thereby be removed. See *Aphor. LXVIII. Sect. III.*

A P H. XCVIII.

To Vomit after Supper is weakning, because it defrauds the Body of its Aliments, and also because it hinders Perspiration.

EXPLANATION.

The hinderance of Perspiration is a Consequence of the former, as it is explained under *Aph. LIII. Sect. III.* and therefore unless it be Medicinal, and to remove some greater Evil, it is always injurious.

A P H. XCIX.

An Excess of Eating and Drinking, once or twice a Month, the next Day without any sensible Evacuation, will render the Body lighter than usual.

A P H C.

They who use a regular Diet, want the Benefit of those who Debauch once or twice a Month: For the Perspiration occasioned by the Irritation of such an overload is so great, as not to be believed without weighing.

EXPLANATION.

These two last run counter to several of the foregoing, whereby it appears, that a temperate way of living is absolutely necessary to a good State of Health, and if Excess is ever passed over without Damage, it must be where the Constitution is robust, but frequent Repetitions of such Practices will wear out the best in the World; and whosoever pretends to debauch, although but twice a Month for Healths sake, it is to be feared will find a time for Repentance.

A P H. CI.

In cold Constitutions Honey is serviceable, because it nourishes and perspires; but in hot it is hurtful, because it turns to Bile.

EXPLANATION.

Honey may be reckon'd of the same Kind, with those of *Aphor. LXXXI, LXXXII. Sect. III.* and produce the Effects mentioned in the former Part of this, for the Reasons therein given. And that in hot Constitutions it produces Bile, is because that Juice is the Produce of too great an Agitation and Heat of the Blood, whereby its Parts are too much broke, that instead of supplying the Secretions in the usual manner, they run into preternatural Cohæsions, and form such Particles as are fitted only for the Secretion of those Organs, that are constituted for such a separation.

A P H. CII.

Nothing hinders Perspiration more than to drink during Chylification.

EXPLANATION.

This must be understood of immoderate Drinking, whereby the Stomach becomes distended in such a manner, as to hinder Perspiration by the means above taken notice of, as every thing which over fills the Stomach will do; but if it is not in a quantity to overload it, I cannot see how it can have any such Effect.

A P H. CIII.

By cooling the Liver it less attracts the Chyle, and much the less promotes Perspiration.

EXPLANATION.

That the Liver attracts Chyle at all is a mistake, and owing to a want of better Knowledge in Anatomy, especially in the Circulations and Secretions of the Fluids, for the Chyle as such, never comes at the Liver; or is there any such thing possible as heating or cooling the Liver, but by the Consent of the whole Body; and therefore the Virtues ascribed to some particular Medicines, as more immediately warming or cooling any particular Part, are meerly imaginary.

A P H. CIV.

When in a sound Body the Belly is loose, it is either because Digestion is not well made in the Stomach, or from an Expulsion of the Chyle by an obstructed Perspiration.

EXPLANATION.

An Obstruction of the perspirable Matter will so overburthen the Solids, that if they are strong, they will be irritated to throw it off by other Evacuations, which is the reason why the stoppage of one Evacuation is always the increase of another.

A P H. CV.

A good Constitution may suffer two ways; either by living intirely without Exercise, or by Eating before the Digestion of a former Meal.

EXPLANATION:

The former will further appear in the Vth Sect. and the latter is very plain from what has been said already.

Medicina Statica.

SECT. IV.

Of SLEEP and WATCHING.

APHORISM I.

SOUND Sleep so much promotes Perspiration, that in about Seven Hours, strong Constitutions will frequently perspire Fifty Ounces.

A P H. II.

With Seven Hours Sleep, the Body insensibly perspires, and without any Trouble, twice as much as when awake.

EXPLANATION.

Whether the Quantity here reckoned upon, will always answer upon Tryal, and whether the Difference is so great between the cuticular Discharge in time of Sleep, and when awake, as here asserted, is not very material to enquire into; or is it indeed possible, that this Evacuation shou'd be found the same in different Countries, different Seasons, or different Constitutions; and therefore Allowances are to be made, upon any such Tryal; but that Perspiration goes on more regularly and freely in the time of Sleep than when awake, is certain, and for the Reasons given under *Aph. XXI. XX. Sect. I.*

A P H. III.

That Perspiration in Sleep, which is attended with Sweat, does not carry off more than when it is insensible, and without Sweat.

E X P L A N A T I O N :

This may be true, but not without Restriction, for without Doubt, in those Sweats with which an Ague Fit commonly goes off, there is a much greater Discharge made for the Time, than is ever made by the largest insensible Perspiration in the same Space of Time, and I very much question, whether the Body can any other way more effectually be prepared for a large Discharge by the Pores of the Skin, than it is by an Ague Fit : because the Concussions made by the Yawning and Shivering which precedes it, wonderfully breaks the Viscidity of the Juices, which obstructs the capillary Vessels, and thereby are very conducive to promote this Evacuation. But from several *Aphorisms* of the foregoing *Sections*, as well as this, it appears, that Perspiration which is insensible, is the most necessary and most serviceable Evacuation, and that generally it carries off a much greater Quantity when rightly perform'd, than Sweat, although this appears most sensible upon its Expulsion. Where therefore 'tis practicable to draw off any additional Weight of the Body by Perspiration, it is much better done that way, than by any other Discharge ; because thereby no unnecessary Strain or Irritation is given to the Constitution, whereby it may afterwards suffer, and therefore moderate Exercise, and a temperate Use of the *Non-naturals*, may much more easily bring about this good End, than the Vertues of the most celebrated Medicines.

A P H. IV.

The Body is lighter after Sleep, both by an Increase of Strength, and the Wast of, at least, Three Pound of Excrement.

E X P L A N A T I O N.

A Waste of Substance alone, without keeping up the same Stock of Spirits, that is, without preserving the same Invigoration and Elasticity of the Solids, will not make the Body seem any lighter than before, because although there is a Diminution of its *absolute Weight*, so long as there is also a proportionate Decay of Strength, a Person will have the same Sense of Weight as before; but as by Sleep after a good Digestion, there is both made a waste of Substance, by what is thrown off by insensible Transpiration, and also at the same time, a fresh Supply of Spirits given to the Fibres, a Person cannot but both really be, and seem also lighter; such Discharges therefore which are of the greatest Benefit to the Constitution, are those by whose Expulsion such Matter only is thrown off, as is well digested and of no farther use to be retained in the Body; and when at the same time, such Dispensations are made of all the animal Juices, to the several Parts of the Body, as the due Performance of their respective Functions require.

A P H. V.

Interrupted and unquiet Sleep, lessens the Quantity usually thrown off by Perspiration, about a third Part.

A P H. VI.

Perspiration in sound Sleep is sometimes greater, than what is made by Exercise in the same Compass of Time.

E X P L A N A T I O N.

This *Aphorism* is exactly the same with several of the former, and agrees also with many of the following *Sections*; but whether it be true in the greatest Latitude is very much to be doubted, for the Reasons given under *Aph. III.* of this *Section*.

A P H. VII.

In the Morning Sleep, after the first Digestion is perfected, about a Pound of the perspirable Matter goes off in an Hour : but if that is not perfected, not above a Quarter so much.

E X P L A N A T I O N.

How absolutely a previous Digestion is necessary to Perspiration is abundantly manifest from what has gone before : and therefore where that is defective, this Discharge cannot but very much fall short, at whatsoever Time it happens ; but more especially in a Morning, when the Body otherwise would be much the most disposed to it. The greatest Care also at that time ought therefore to be taken that it be not interrupted ; because a Person then receives from it the greatest Benefit.

A P H. VIII.

Whatsoever hinders Sleep, hinders also the Perspiration of that digested Matter which ought to exhale.

E X P L A N A T I O N.

Because by Sleep, as has been said before, the Solids are relaxed, and the cutaneous Pores laid more open, by which the perspirable Matter has more Room to fly off.

A P H. IX.

Short Sleeps are occasion'd by the Acrimony of some obstructed perspirable Matter ; and the perspirable Matter is often obstructed, by Natures being more than usually employed about some of the internal Functions.

EXPLANATION.

The former Part is very true, and the Reason of it very plain, for the Juices lodged in the Glands and secretory Passages, oftentimes acquire a Sharpness, by which they vellicate the Fibres, contract them, and prevent that true Relaxation of the Solids as is necessary to procure a sound and undisturbed Sleep. But as to Perspiration being hindred by Natures having something else to do within, I cannot understand any otherwise, than as it is explained under *Aph. LVII. Sect. I.*

A P H. X.

The Acrimony of the obstructed perspirable Matter, most commonly affects the Head, disturbs Rest, and hinders the Perspiration of the upper Parts.

EXPLANATION.

In what Part soever the Nerves are irritated, the Head is generally most injured thereby, because from thence they have their Origine, and it is sooner by that means drawn in- to Consent with the stimulated Part than any other; and as it was proved before under *Aph. XLIX. Sect. I.* that all Pain in general, in whatsoever Part it hath its Seat, will contract the Nerves, and thereby hinder Perspiration, so of Consequence where the greatest Pain is, there will be the greatest Con- traction, and the least Perspiration.

A P H. XI.

If any one after Sleep finds Pain in his Arms, or a more than ordinary Weariness, it denotes the Body to be heavier, and so much, that Nature cannot long bear up under it.

EXPLANATION.

Such Pain and weariness after Sleep, when a Body ought to be most lightsome and refreshed, are a certain Sign both of

an obstructed distemper'd Matter, and of some Defect in that Secretion of the nervous Fluid, by which the Solids are to be invigorated; neither of which Disorders can continue long, without bringing the Body into some Ill Distemper.

A P H. XII.

Whosoever sleeps with his Legs and Hips bare, will perspire that Night a Pound less than usual.

EXPLANATION.

Because the Perspiration of those Parts, will be obstructed by the Coldness of the Air, which, if its Effects went no farther than those Parts exposed to it, would prove that by this Calculation, their Superficies would be about a Fifth of the whole Body, supposing also, all Parts to exhale near the same Quantity, when equally covered from the Cold. But as the least Irritation of any particular Part, will more or less, according to the greater or lesser Tensions and Elasticity of the Fibres at that time, draw other Parts likewise into a Consent therewith, no one can foretel, what will be the Consequences of a partial Application of such Means to the Body, or how much Perspiration will be hindered thereby.

A P H. XIII.

Continual Restlessness in Bed, agitates the Body more than swift running: for in the Motion of One running, the Muscles of the lower Parts only are moved, whereas by turning about in Bed often, those of the whole Body are concerned.

EXPLANATION.

Such restless Motions in the Bed, are without Doubt more injurious to a Person, than the Exercise of swift Running, as they keep the Solids in a contracted State, at that time when Nature requires them to be relaxed, as in sound Sleep, in order to perform the Business of Perspiration, but that a greater Strain is thereby laid upon the Muscles is a Mistake,

Mistake, or that in every Respect, the Body is more agitated; for by swift Running, not only thole of the Legs are exercised, bnt all the Muscles of the whole Body by Consent are strained, but especially those of the *Thorax* and lower Belly in Respiration are put into very brisk Motions; and as for those of the Arms, I believe there are but few who run very fast with their Hands in their Pockets.

A P H. XIV.

Perspiration is hindred more in the time of Sleep by a cool Southern Air, than when waking by an intense Cold.

E X P L A N A T I O N.

Because in that relaxed State, the least Pressure and Contraction imaginable is discernable and injurious, and the Pores likewise at that time lying opener, the exhaling Matter is the more easily stopped and fixed in its Passage: Whereas when awake, although the external Air be intensely cold, as long as the Solids are firm and keep their Springs, their Contractions will be smarter and more frequent, and the perspirable Matter thereby so much broke, as to be fitted to fly off through much narrower Passages.

A P H. XV.

If the Nights Sleep is less than usual, the Exhalation of the Digested perspirable Matter will be lessened; but that of the Undigested increased.

E X P L A N A T I O N.

In time of Sleep by the Laxness of the Fibres and Openness of the Pores, there is most Room for the perspirable Matter that is well digested, to go off; when therefore it is interrupted, and the Solids drawn up, as they are in waking before the due Quantity is gone off, there will a great deal be detained, which by the Actions of a waking Person, will afterwards be expelled, but not without a mixture likewise of

some Parts, not yet broke far enough for that Discharge, as it is performed during Sleep.

A P H. XVI.

From Meat of easy Perspiration, the Body is render'd weaker, rather than heavier; but from Meats difficult to perspire, both weaker and heavier.

EXPLANATION.

This *Aphorism* properly belongs to the foregoing *Section* of *Meats and Drink*, in which it appears at large, that Food of easy Perspiration best undergoes that Digestion which is made in the Blood, and therefore is most suitable to weak Persons, and such who have lost much by any Distemper or long slender Diet: But as it also contains the least Nourishment, that is does but little enter into the Substance of the Body, such is the less fit for Persons in Health, especially those of robust Constitutions: because by it, altho' the Body is in the less Danger of being overcharg'd, yet it is very likely at the same time to lose considerably both of its Bulk and Strength; because there is not Nourishment enough in it to recruit the continual Wast of the Solids. But when Meat is of difficult Perspiration, altho' it digests in the Stomach, and passes the *primæ viæ* never so well, yet it tends to make the Body both heavier and weaker; for it encreases the Weight of the Body by not passing off in sufficient Quantities by insensible Perspiration, as hath been before prov'd of such sort of Food; it being too gross and viscid to get that way; and it renders it weaker, both by the additional Weight of what is retain'd, and by its not being broke or digested enough in the Arteries, to be converted into that Spirit or *Animal-Oil*, which is necessary to enable the Solids to perform their several Offices.

A P H. XVII.

The perspirable Matter which goes off during Sleep, differs specifically from what passes when awake; for the former is the result of a good Digestion, without Acrimony, and is refreshing to
the

the whole Body ; but the latter arises from Crudities, and is sharp, violent and laborious.

EXPLANATION.

From *Aph. XX. XXI. Sect. I.* this Difference has already been explain'd, and may farther be collected, from the Digression concerning a *distractile Fibre*, where it appears that the Matter of insensible Perspiration is principally the Recrements of the *Succus Nervosus*, or that *Animal-Oil* with which all the Solids are moistened, broke too small to be of any further Service, and rendred so light, as to fly off whensoever it gets at the Surface ; and that tonic Motion of the Fibres, by which this Matter is prepared from that Juice being more regular, and the cutaneous Passages more open in time of Sleep, than when awake, it cannot but be more easily and more plentifully prepared and discharged, at that time then when awake ; but at other Times the Nerves being variously agitated by the Impressions made upon them by external Objects, this Juice has not that regular Propulsion as before ; and therefore what happens to escape, are only such Particles, as by the Force of the contractile Vessels, are thrown off.

A P H. XVIII.

A Person when asleep, perspires as much more as when awake, from whence is the accustomed Saying, that *an Hours Rest with Sleep, is as good as Two waking.*

A P H. XIX.

Insensible Perspiration, in the Space of Seven Hours during Sleep has been found in a great many, to be about forty Ounces, and in Watching twenty.

EXPLANATION.

The Calculation here agrees with several of the foregoing. In the first *Aph.* of this *Sect.* he indeed makes the Quantity perspired during so long Sleep, fifty Ounces, but then it is to be supposed, in very sound uninterrupted Sleep : And as the
various

various Differences of Constitutions and several other Causes, may make a Difference in this Evacuation, this will not appear to be at all inconsistent.

A P H. XX.

Whosoever goes to Bed with an empty Stomach, that Night perspires about a third Part less than usual.

EXPLANATION.

Because the Matter of this Discharge is not supplied in due Quantity, although it is not at all improbable, but that there may sometimes be a Concurrence of such Causes, as at such a Time to occasion a very plentiful Discharge this Way ; but then there cannot but some Damage or other ensue, either by too great a Diminution of the Fluids or by straining too much the Solids, or by both.

A P H. XXI.

Bilious or Cholerick Persons, who go to Bed without Supper, will be troubled with Crudities in the Head and Belly ; their Temples will beat, their Flesh waste, and strong Tensions will arise in the Arms and Hands, and sometimes Twitchings at the Heart, Vertigoes, and Epilepsies, as it happen'd to *Diodorus*.

EXPLANATION.

See *Aph. LXXXV. Sect. III.* where this is explain'd at large, why Fasting in bilious Constitutions, more particularly than any other, shou'd aggravate these Symptoms, is because the sharper and more irritating the Fluids are, the more must the Solids be disorder'd ; and sometimes so far as to give Rise to the above mention'd Diseases : See back also under *Aph. CI. Sect. III.*

A P H. XXII.

A plentiful Supper after a larger Perspiration than usual, procures a larger and pleasanter Sleep.

EXPLA-

EXPLANATION.

Because after such a large Perspiration, the Nerves will be emptier of their Juices, and stand in greater Need of a Supply, therefore upon a good Meal, as soon as they are relaxed by Sleep, they will continue so, unless irritated by any foreign Disturbance, until the Food taken in by that Meal be well digested, and they are thereby recruited with a fresh Stock of Spirits: But,

A P H. XXIII.

A less Perspiration than is needful, is followed by unquiet Sleep and a restless Night.

EXPLANATION.

Because besides the additional Load of the obstructed perspirable Matter, a full Meal at such a Time, will much encrease the Burthen already laid upon the Solids, and thereby render Digestion very difficult, and occasion more Uneasiness than is consistent with sound Sleep.

A P H. XXIV.

If after a short and restless Sleep the Flesh seems cold, and a little Fever arises; in weak Persons it is a Token of Death, but in the Robust, a Fore-runner of some long Distemper.

EXPLANATION.

Such a Sense of Cold after a little Sleep, is a Sign that there is some great Disorder in the Contexture of the Fibres or the Fluid, which should give them their Elasticity, whereby as soon as Sleep comes on, and they fall into a State of Relaxation, instead of performing their Contractions more regularly at that Time, as they do in healthful Constitutions, they either lose very much their Motions, or have thrown upon them a Fluid very unfit for that use, whereby they come to lose their due Contractions afterwards, insomuch as frequently to be followed with very bad Distempers, and sometimes Death,
and

and the first Appearance of such Disorders, may often be by a Coldness after Sleep, which ends in a Feaver; because the first irregularity hereupon in the Oeconomy, is a partial Distribution of the Fluids, and a Retardation of the Bloods Motion, which will always occasion a Sense of Cold, as has already been proved. But at first, what will be the Consequences of such Disorders God only knows, because there are often so many ways both of removing the Causes, or bringing Death which the Wisest cannot foresee in Time, either to bring about the one, or prevent the other: but undoubtedly it will fare much the worst with the weakest Constitutions, as not being able perhaps to struggle with it. Where Digestion has been bad, and Perspiration lessened for some Days together, it is most likely to be discovered at the time of waking, because as soon as the Nerves are relaxed, and Sleep comes on, that Matter which is intended to be discharged by the Skin, will by the natural Course of the Circulations be crowded that way, so that if the first cannot get through, the continual Protrusion *à tergo* of fresh Matter, will at last make the Obstruction so great in the Capillary Arteries, and distend them in such a Manner, as to occasion a great deal of Uneasiness, and at last raise a Feaver, and for this Reason it is, that the first Attack of a Feaver is most commonly felt at these Times.

A P H. XXV.

Changing a Bed occasions disturbed Sleep, and lessens Perspiration; for an unaccustomed Place, although better than before, disturbs both the Body and Mind.

A P H. XXVI.

They who sleep in a strange Bed, dream more than in their own.

EXPLANATION.

These are obvious to every ones Notice, and are undoubtedly occasioned only by the Change of Objects which are about a Person, and take up his Mind with some more than usual Attention, and thereby prevent that easy Relaxation, which is necessary both to a good Perspiration and sound Sleep.

A P H. XXVII.

They who Sleep and do not Dream perspire well, and on the contrary, they who Dream much, Perspire the less.

EXPLANATION.

Dreaming is a State between sleeping and waking, wherein although the Mind does not exercise such a Power over the Body, as to direct its Motions in the same Degree as when awake, yet by its Attention to those confused Ideas which pass through it, the Solids are kept in some Degree of Contraction, greater than is agreeable with sound Sleep; and therefore Perspiration which depends upon a settled Relaxation, cannot so well be performed at such Times, as when in quiet Sleep.

A P H. XXVIII.

Sleep about four Hours after Eating is most serviceable; because Nature is not so busy at that time about the first Concoction, and she then better recruits what is lost, and better carries on the Business of Perspiration.

EXPLANATION.

From what hath been abovesaid, it appears that a full Stomach is injurious to Perspiration, and that Natures being busy about something else, is no more than that during the Load of a full Stomach, the Nerves are more contracted, and thereby there is the less Room for the perspirable Matter to pass off. It is abundantly manifest from Anatomy, that the Course of the *Chyle* only from the Stomach into the Blood, is a Considerable Length, and that it requires four or five Hours Time to perform that of a whole Meal. By the Weight and Distention of the Parts about it, a Person may perceive the Food to remain in his Stomach an Hour or two at least; which after it has passed in a well digested *Chyle* into the Intestines, its Stay there is near as long, the *lacteal* Veins although very numerous, being yet so exceedingly fine, as not

to admit the whole Quantity to pass them under a considerable Time; its frequent Stops in the *mesenterial Glands*, and the *Receptaculum Chyli*, and its slow ascent up the *Ductus Pecquetanus*, fill up such a Space of Time as here spoke of: As soon therefore as it is got in the Blood, such a quiet and relaxed State as Sleep procures, is the most conducive to its regular Mixture with the animal Fluids, and its secession, either into such Parts as the several Exigences of Nature require for Nourishment, and the uses of the several Parts of the Machine; or such as are fitted, to go off by Passages on purpose designed for those which are of no farther use; and this is thoroughly confirm'd by the following

A P H. XXIX.

If five Hours after Supper, a Person is suddenly awakned, and weighed, he will be found to have perspired barely half a Pound; but if eight Hours after Supper, the same Experiment be tryed, three Pounds.

EXPLANATION.

For by this it appears, that from the fifth to the eighth Hour, there goes Six times as much off by insensible Perspiration, or very near, as from the time of Supper to the fifth Hour after.

A P H. XXX.

From Sleep something Shorter than usual, there will always some part of the perspirable Matter be retained, which unless it be thrown off, by an increased Quantity of Perspiration the following Days, will endanger a Feaver.

EXPLANATION.

The Matter to be discharged by insensible Perspiration, going off most plentifully in the Time of Sleep, it cannot but happen, that when Sleep is interrupted or shorter than usual, some

part of it must thereby be retained in the Body; which if it be not thrown off afterwards by an Increase of that Evacuation beyond what is natural, it must needs either bring on a Fever, or some other Distemper, that takes its Rise from such an Obstruction.

A P H. XXXI.

By some Part of the usual Perspiration being retained, either the next Day after Dinner we fall asleep, and perspire in the Space of an Hour, about a Pound: or the following Night Sleep is so much the longer, by which more than usual is perspired: or else we fall into some sensible Crisis, or a Distemper.

EXPLANATION.

This fully confirms the preceding, and is so plain as to need no Explanation.

A P H. XXXII.

Yawning and Stretching the Limbs after Sleep, is a Sign the Body has perspired very well; as it is customary with the Cocks to stretch and clap their Wings before they crow.

A P H. XXXIII.

That Stretching and Yawning after Sleep, is occasion'd by a great Plenty of perfectly well digested perspirable Matter, which is in readiness to be thrown off.

A P H. XXXIV.

The Body by yawning and stretching, in the Space of half an Hour, perspires more than in three Hours at any other Time.

EXPLA-

EXPLANATION.

Such Extensions in general, or of any particular Part, according to the Sense of the three preceding *Aphorisms*, are owing to some gentle and pleasing Irritations of the muscular Fibres; and that such Irritations or gentle Vellications are occasioned by a great Quantity of the digested perspirable Matter hanging about the Surface and extreme Parts of the Body. and not thoroughly discharged, is no difficult Matter to conceive. For it appearing that in time of Sleep, there is a continual Course and tendency of a fine thoroughly digested Matter towards the Circumference which is discharged through the cutaneous Pores, and that during Sleep likewise the Nerves are in a State of Relaxation, it cannot but happen, that when a Person awakes, both the Course of those Steams will be considerably diverted, and the Fibres something more contracted; and consequently the perspirable Matter just passing, detained at the Extremitities of the excretory Ducts; which, as the Sleep is still shaken off, and the Solids are more and more drawn up, will be squeezed so close, as at last to give those Vellications to the small Filres, composing those Glandules where they stick; and insomuch that sometimes the Muscles themselves are drawn into Consent, and provoked to those Tensions and Concussions, by which they excite the Stretchings and Yawnings, as at that time we find ourselves inclined to. And these Inclinations continue until all that Matter is thoroughly shook off; which by this Means is loosened from its small Entanglement, and dispersed, as Water is shaken off a Wet Sheet, and this is the Reason why Perspiration is so large at those Times. This also makes it appear, of what vast Advantage is a little brisk Action just upon rising from Sleep; and I cannot but be persuaded, that to leap suddenly out of Bed in the Morning, and before putting on any Garments, to leap and throw about the Arms with Weights in each Hand, untill almost out of Breath, wou'd be as likely an Exercise to keep the Body in a sound and perfect Health, and to give a Firmness to the Constitution, as any one thing besides. See *Aph. LXXIV. Sect. I.*

A P H. XXXV.

They who give Syrrups and other Medicines, to sick Persons, in the chief Hours of Perspiration, which are commonly after Sleep, do harm ; but in the following Hours good.

EXPLANATION.

Because the Nauseousness and Uneasiness such Things occasion at Stomach, astringes and draws up the Fibres so much as to hinder Perspiration.

A P H. XXXVI.

Stretching and Yawning in an *Ague-Fit*, do not denote a Concentration of the *Vital-heat*, but an Excretion of a retained perspirable Matter.

EXPLANATION.

This very well agrees with Dr. *Jones's* and *Bellini's* Accounts of those Symptoms in Intermittent-Fevers : And both of them place the immediate Cause of an Intermittent-Fever or Ague, in an Obstruction of a Viscid Matter in the capillary Arteries, which by every Paroxysm is broke away and discharged out of the Body, chiefly by Sweat and Perspiration, upon a plentiful Eruption of which the Fit goes off and all is well, until the Supply and Renewal of the immediate Cause brings on another ; all which falling in so naturally with the Contents of a great many of these *Aphorisms*, and having made these Distempers more particularly the Subjects of my own Enquiries, I shall here in as short a Digression as I am able, give an Account thereof, so far as of my own Knowledge it exactly agrees, both with the excellent Accounts of the above-mentioned Authors, and as it is also a further Confirmation of the *Sanctorian* Doctrine of Perspiration.

DIGRESSION II.

Concerning Agues, and their Cure, without the Bark!

And in general, it may not be out of the Way to premise, that all periodical Distempers have their Rise from a Disproportion between the Supply and the Waste of some of the animal Fluids, by which they come to offend in Quantity, or Quality, or Both; and also that upon adjusting this Irregularity, and bringing the Secretions to their natural State, and preserving the *Equilibrium* between the Force of the Solids, and the Resistances of the Fluids, depends always their Cure. And without entring into the Account of any particular Distemper that is periodical, thus much in general may be receiv'd for Truth, for if there was not a Removal of the immediate Cause every time it makes its Attacks, the Distemper would be continued; and if there were not a Continuance of the remote Causes, it would not return: And nothing therefore is more certain than, that in order to make an effectual Cure, there must be a Removal of the *Causæ remotæ*, or what *Institution* Writers commonly call the *Causæ procatarticae*, as well as an absolute Removal of the present Fit.

This being premised, it may be laid down as a general Proposition, that *Agues have their Rise from an increased Viscidity of the Blood*. That this is the State of the Blood in Persons labouring under this Distemper, cannot easily be questioned, when we come to consider the Loss of Colour, want of Appetite, a Sense of unusual Weight, Listlessness to Action, and a general Coldness of the Flesh; which will further also be confirmed when we come to consider the Means by which this Disorder is the most effectually removed, all of them having a Tendency to heat and thin the Blood.

The Blood becomes too viscid by an Encrease of its Quantity, or by subtracting from the Force of the Heart and Arteries, or by both together. An Encrease of its Quantity only, whether it be by a Diminution of any of the Evacuations, or by taking in more than usual by Food, supposing the Force of the contractile Vessels to remain the same; the Encrease, I say, of its Quantity alone in this State, will encrease its Viscidity; because by its giving thereby greater Resistances to the Vessels in their Contractions, they will not be able to press it forward so fast as before, whereupon the attractive Powers of its

component Parts, will be greater in Proportion to the Force impressed upon them *ab extra*, and thereby will they run more into mutual Contacts with one another than they did before, and as it hath already been proved from Dr. *James Keil* of animal Secretion Prop. 2. and 9. that the specifically lighter Parts, that is, such Parts as have the largest Surfaces in proportion to their Solidities, as they are slowest in their Attractions, and strongest in their Cohesions when brought into Contract, so upon this Retardation of the Blood's Velocity, will the Encrease of their Obedience to their attractive Powers, be greater in proportion, than that of those parts, who have smaller Surfaces and greater Solidities; that is the lightest and most viscid parts of the Blood will draw one another, more in proportion to what they did in a greater Velocity, than the more heavy and solid Parts, and form such Cohesions as will not admit them through the capillary Vessels, so that when they are thrown into them, there they must lodge and be obstructed.

With the same Consequences also is attended any Subtraction of the Force of the Heart and Arteries, when the Blood remains in its natural Quantity, as it is well known in *Mechanicks*, that the weakning the motive Powers of any Body, is the same as increasing its Resistances with regard to its *Percussion*, and *vice versa*. And therefore all that it concerns a Person to know on which Side the Fault lies, is only so far as regards the Cure; in which, when a thing is to be brought about several Ways, (as hereafter I shall endeavour to prove That of this Disorder is) there may some Circumstances turn up, which may make it much more convenient and secure to take one way than another. That both these Causes may also sometimes concur in producing this State of the Blood, is not to be questioned; as debauching in Seasons when the Air is hot and moist, for hereby both the Quantity of the Blood is encreased, and the Solids weakned at the same time; wherein if either of them singly will have this Effect, they canot but both together more speedily bring it about.

But besides the Bloods Encrease by too great a Supply from eating and drinking, or a lessning its Wast by too flaccid a State of the Solids, or by a Diminution of the sensible Evacuations, there is also another way of doing it, and that is by drawing up the Solids too strait, which before has been proved always to lessen Perspiration, and frequently likewise other Evacuations. And in this seems chiefly to consist the

Difference between Intermittent Feavers, and acute continued ones; that the latter is owing to too great a Fulness, attended with too contracted and too springy a State of the Solids, and the former to too great a Fulness, when the Solids are too loose and flaccid; which are so very opposite, and require such different Methods of Cure, that whosoever is not well apprised hereof, will do more Service to the Sexton than his Patient. And considering how manifest this Difference is upon any diligent Enquiry, it is to be wondered at, that so little Notice is taken of it. It is well known, that the most rational and successful Practice in acute Feavers, is Diluting, raising Sweat, and quieting and abating the too great Springyness and Contractions of the Solids, all which is brought about by thin subacid Liquors and Juleps, by a gentle Promotion of any of the Evacuations, and keeping the Body as still and free from Motion as possible. But in Intermittent-Feavers, it is quite otherwise, for there all these things are destructive; and the greatest Service and most effectual Cures, are always brought about by such Means as draw up and encrease the Springyness of the Nerves; by plentiful Doses of spirituous Liquors, piperine Medicines, Subastringents, violent Exercise, sudden Frights and the like: And herein all Evacuations, unless that by insensible Transpiration, and even Sweat it self except to relieve the present Fit are always bad, and sometimes fatal; nay frequently Evacuations, soon after a Recovery, return the Distemper, and sometimes with more Violence than before.

Thus then the Matter is drawn into a narrower compass, and it appears more particularly that *an Ague is from a relaxed State of the Nerves, and a viscid Blood together.* Both these are brought about by various Causes. The Solids sometimes grow too slack by a Diminution of the Atmospheric Pressure upon the Circumference of the Body; for supposing the Quantities of the Fluids the same, or their *Nisus* against the Sides of the Vessels that convey them to remain with equal Strength, whenever the Pressure of the Atmosphere decreases, the Vessels will be the more stretched, and their Constituent Fibres lengthned, in which State their Restitutions and Contractions will be weakened: Another external Cause also may be too moist or foggy an Air; which by hanging too much upon the Skin, will hinder the Exhalation of the perspirable Matter, and both together render it so supple and flaccid, as in a little Time to draw also into Consent the Fibres of the whole

Body. Too tender a way of living also will render the Solids too loose, as wearing too thick Garments, lying too much in Bed, continuing much by a Fire-side, warm Bathing, and a Dilute of accustomed Exercises, There are also internal Means by which the Fibres loose their due Tensions, as an insufficient Supply of Food in Quantity, or a Supply of such as by its Quality is not fit to furnish the Solids with that Recruit of Spirits; as is necessary to maintain their Firmness and Elasticity.

The Blood will grow viscid, and it self be often first in Fault, by feeding too plentifully upon such Meats and kind's of Food, as in themselves have a natural Tendency to run into those Cohesions, as cannot easily be separated, and form such Substances as are glutaneous and tenacious; of which sort are *Fish*, and several Fruits, as *Melons*, *Cucumbers* and the like. Another Cause likewise is a weakness of the Spring of the Air, which it is well known, in some Seasons and Places, is much more so than in others; for by this only, that Part of it which mixes with the Blood, and ought to raise its Globules, will do it so faintly, that those Globules will in some Measure subside, and by that Means their Contacts will be greater, and consequently their Cohesions stronger; that is, the Blood will thereby be rendred more viscid. But still the most common Cause of the Bloods Viscidity, is from a Loss of the due Force and Elasticity of the Solids; for whenever this happens, the parts of the Blood by being less agitated, cannot but thereby the more attract one another, and form stronger Cohesions, in such a Manner as hath already been demonstrated at large under *Aph*, XXII. *sect*. III.

That these are the Causes of Agues or Intermitting-Feavers, and that this is the true State of an Aguish Constitution, it might further be a great Confirmation, to go through all the Shapes and Symptoms of this Distemper, from its first Attacks to the Declensions of its Paroxysms, and a *Rationale* of its different Types; but because this would draw out this Digression into an unpardonable Length, I must beg the Reader for further Satisfaction to consult Dr. *Jones's* Book *de Febris intermittentibus* and *Bellini de Febris*, prop. 18-----26. and as the most effectual and natural Methods of Cure, are likewise a great Addition to the Proof of this Theory, I shall content my self only with just taking Notice of them.

And first nothing is more obvious to this Purpose, than that the Viscidity of the Blood must be broke, and this is to be

done by such means, as will keep its Parts from running into those Contacts and Cohesions which cause its Viscidity, and as will break and divide those Cohesions when formed. The former is to be done by mixing something with it, as by the peculiar Bulks and Figures of its Parts, may be a hindrance to those of the Blood, which cohere so strongly when got together, from coming into close Contact with one another; and the latter by giving them such brisk and forceable Motions, as are sufficient to separate them when joined.

Now whereas it already appears, that those parts of the Blood that are most viscid, are such as have the largest Surfaces, and the least Solidities; what therefore is most proper to keep these Parts from coming together, must be something specifically heavier, that is, something that consists of Parts of much lesser Surfaces and greater Solidities, whatsoever therefore is endowed with these Properties, will if mixed with the Blood in sufficient Quantity destroy its Viscidity, or at least prevent it from growing more so.

But that which is most effectual to break its present Viscidity, is to give it very forceable Agitation; for several parts may so strongly cohere as not to be divided by the Insinuation of any other Particles moving against them but faintly, whereas when they are forceably moved and struck one against another, by degrees they will be broke, and reduced small enough to be discharged by some of the Evacuations; this Way likewise of breaking the Viscidity of the Blood by Motion, as it is not to be done but by the Assistance of its contractile Vessels, so such Concussions of the Vessels, will help to wear away whatsoever Parts have before been lodged and obstructed in the Capillaries. This Agitation indeed of the Blood from the Solids, may be very much assisted by spirituous and aromattick Compositions, which by their subtilty and activity of Parts, help more intimately to keep up the intestine Motion of the Blood.

But further besides destroying the present Viscidity, the Solids must be drawn up straiter. and digestion and Perspiration regularly carried on, for after ever Paroxysm, although the Blood is entirely brought to right, yet if the Flaccidity of the Solids remains, the Vibrations of the Vessels will not be smart enough to digest the continual Supply of the Blood, and wear off a proportionate Quantity by Perspiration, whereupon sooner or later, as the Solids are more or less slackned, there will be a Renewal of the Viscidity and Quantity of the Blood

Blood, until it comes to such a Height as before, when it brought on a Fit; and in this altogether consists a confirmed and lasting Cure of this Distemper, that the Solids be restored to their natural Firmness and Elasticity; to the Neglect or Ignorance of which, is the Reason why it so frequently returns, soon after the Efficacy of the Remedies which put it by for some time, are over: For suppose for Instance, that the Viscidity of the Blood arises barely from the Encrease of its Quantity, that the Encrease of its Quantity, proceeded only from a Diminution of Perspiration, (or as we commonly say from taking cold,) and that the Diminution of Perspiration is occasion'd by the weakness or Flaccidity of the Fibres, as most commonly indeed in this Case, it is thus; then if half a Pound (for Instance) of the perspirable Matter be obstructed in twelve Hours, and the Quantity of two Pound additional is sufficient to bring a Fit, then in eight and forty Hours time, there will be a Fit; which if it carries off all the additional Load, and leaves the Blood as before, yet as long as the Cause remains, that is the Flacidity of the Solids, in forty eight Hours after, there will be again the same Overcharge and another Fit; and so on, while things remain in this State, now if such a Remedy is found, that will draw up the Nerves so far after a Fit, as to bring such an Encrease of the obstructed perspirable Matter to four Ounces, then it will be four Days e're there is another Fit; but if this Disproportion be so far removed, as to reduce the Quantity obstructed to an Ounce only in twelve Hours, then it will be sixteen natural Days e're the Return of a Fit; and about this length of time it is that, the celebrated *Peruvian-Bark* is found to make a Cure, but as the Cause is not entirely removed, there is as much Necessity of the Fits returning at the End of sixteen Days, as there was before of its Return after two Days. And thus appears the absolute Necessity of having a particular Regard to the State and Tensions of the Solids, in order to make a lasting Cure of this Distemper; as well as to the Correction of the Blood and Humours, as People commonly talk, for by this we see one will not do without the other.

As both these are therefore to be set about, in order to effect a perfect Cure, viz; to break the Viscidity of the Blood, and draw up the Solids so far as to perform a perfect Digestion, and prevent a Re-increase of the Bloods Quantity; it is next of the greatest Concern to know, by what Means both of them are to be brought about, and which of them

ought first to be attempted. And as to the latter it seems plain, that the Viscidity of the Blood ought first to be broke, and what is obstructed in the Capillaries to be dislodged ; because otherwise to draw up the Solids whilst such Obstructions remain, is the most likely way to tye up the faster that viscid Matter, and thereby aggravate the Distemper ; besides it will be a Task of Difficulty to bring up the Fibres to their due Force, with such a Load upon them ; and for these Reasons 'tis that we frequently see so much Mischief done, by giving the *Bark* or any such Remedies as answer that Intention of straitning the Fibres, before the *Lentor* of the Juices is sufficiently removed ; although indeed it very frequently happens, that a Removal of the *Lentor* is brought about upon drawing up the Fibres only ; as we see Persons frequently cured by Frights, or great Strength of Imagination, upon pretended *Amulets* and *Charms*, and the like ; yet as it may be attended with the ill Consequences above-mentioned, it cannot but be much better to break the *Lentor*, before any such means are attempted ; and further because when the Distemper has been really removed by the latter Intention only, it frequently happens that the morbid Matter is thrown upon some of the *Viscera*, so as to disturb their proper Offices, and according to the Part affected, either produce *Faundies*, *Cachexies*, or *Asthma's* ; or else it remains closed up in the Glands and capillary Vessels, until by some fresh Causes, the Fibres are slackned, and then it never fails to appear in its former shape.

It next then is of Consequence to know by what means and Instruments, both these Intentions are most effectually to be answered ; the first as hath already been taken Notice, is to be brought about by mixing such Particles with the Blood in Plenty, which are both much smaller and specifically heavier, than those Parts which form its viscid Cohesions, and also by giving very brisk and strong Agitations to the Solids. The former is answered by taking volatile Salts, and all Compounds of Aromaticks and Bitters, as those of the Alexpharmick Tribe generally are, and the latter is done by nothing so effectually as by Vomiting, which not only drains off from the Stomach, and its Glands, a great deal of this viscid Matter, but also by the forceable Actions it gives to the Muscles of the whole Body, all the *Viscera*, and even the extreamest Parts of the Body, are very much shook, squeezed, and cleared of their viscid Contents, which is very manifest from the profuse Sweats which will easily arise after this Operation, when it is well

well timed, and a Dose of some good Alexipharmick exhibited after it,

And when this is done, and the Blood rendered duly fluxile, as for the latter Intention, and which indeed is the chief, I hardly know what will not answer, under the Management of one who hath any just Notions of the Mechanism of the Solids; all kinds of moderate Exercise, and all Sub Astringents will do it. But by Exercise I would be understood with a considerable Latitude, for of this kind I take to be cold Bathing, and whatsoever affects the Mind with intense Thought, which will further appear to draw up and give a greater Tensity to the Nerves, by what will be said in *Sect. VII.* And this is the Reason why so many are cured by what are commonly called *Charms*, the weakness of some Minds exposing them to be intensely affected, and rais'd with strong Expectations, from the strange and confident Assurances, with which those People treat them who deal in such kind of Cures. By all *Sub-Astringents* I say, because if the *Lentor* of the Blood be first removed, whatsoever is rough and gently irritates the Fibres, will draw them up shorter, render the Muscles harder, and effectually make a Cure. But of this kind they are much most preferable, which have likewise in their Composition, something bitter and spicy; because by such, both the Intentions are often answer'd at once; and upon this Account only it is, that the famous *Indian-Bark* hath had the good Luck to get the Name of a Specifick, which because it is taken for such a celebrated Remedy in this Distemper; I shall according to the Theory here laid down, briefly examine how it cures an *Ague*, and then it may better be judged, whether any thing else can do the same or not.

I hope by what hath been already said in the *Introduction*, that the Reader, has got over all such Prepossessions as incline him to expect any other Virtues or Properties, from any Parcel of inanimate Matter, by what Name soever dignified, than such as Result from the particular Figures and Modifications of its constituent Parts: Whatsoever Honours and Names therefore have been ascribed to this wonderful *Bark*, I hope it will not be accounted irreligious, to level it with others of the same Class and to affirm it to be endowed with no other Virtues, than result from the peculiar Modifications of those essential Properties of Matter, which it has in common with all other Bodies of much viler Account.

To know then how this wonderful *Drug* displays its Virtues, we must take it to Pieces, and subject it to the same Ways of Examination as other Bodies ; which is to enquire into the Bulks, Shapes and Solidities of its constituent Particles ; and herein when we come to consider its Contexture, as it appears to the naked Eye ; its Roughness upon the Pallate, and the Difficulty of reducing it into a fine Powder by pounding, or destroying the natural Dispositions of its constituent Parts by Infusion or Digestion, and drawing from it by such Means, any Tincture endowed with the same healing Virtues, as it is known to have when it is given in Substance ; when all these I say come to be considered, it will readily appear, that it is made up of Parts very irregular, pointed, and Solid. By the Texture of the Bark, and the Dispositions of its component Parts, which are discernable to the naked Eye upon breaking, it is plain that they are like little Cylinders or Needles shooting one over another, not much unlike several Salts upon their ChrySTALLIZATION, and when it is broke transversely, any one may see their Points ; which Shape also they may be seen to continue upon pounding, as far as the Eye is able to follow them. Their Solidity also is manifest from the Difficulty of reducing it into an impalpable Powder, but most of all by the little Alterations it undergoes, even by long Infusion ; for if it be then examined, after the Liquor is strained, and it is dried, it will not be found much to have wasted in Weight, and but very little changed either in Colour or Taste ; it loses indeed most of its Bitterness, but its Roughness remains ; and upon Tryal it hath generally been found, that if it be then powdered and given in Substance, it will make a Cure as effectually as when given before such Infusion. The Solidity likewise, as also the Angular Figures of the component Parts of the *Bark*, is further manifest from its Astringency and Roughness in the Mouth, which any one who pleases to taste it, will soon be convinced of.

But besides these grosser Parts, which the *Bark* is plainly compounded of, and which are (not without great Difficulty) broke very small ; it hath also in its Composition, some parts very small and easily dissipable, as appears by that which so easily rises and flies off upon breaking it, as likewise by that penetrating Bitterness which is discernable in it by the Pallate.

That this is the true Contexture and Modifications of the component parts of this famous *Drug*, every one's Senses are

so able to inform him, that I think it can hardly be called in Question; those who would be farther satisfy'd, may turn to Dr. Cole's Book *de Febris intermittentibus*. cap 10. and to Dr. Jones on the same Subject *part. 3. cap. 2.* The last of which seems to have omitted nothing that might give any Light into this Matter, and indeed the whole Book is so full, rational and convincing, that this Subject seems wholly to be exhausted; so far especially as relates to Curing with the *Bark*.

In this View then it will not be at all difficult, to conceive how this *Drug* is of service in answering both the Intentions of curing an *Ague*. Both by the smalness, solidity and Irregularities of its Parts, as soon as it mixes with the Blood, it cannot but give it a greater *Momentum*, encrease the Impulses of its parts one against another, upon which Account a great many Cohesions will be broke, and other parts prevented from running into such close Contacts, as occasion those Cohesions, that is, the Viscidity of the Blood will thereby be broke, and preserved Fluid. The other Intention will be answered, by its corrugating the Nerves, and rendring the Contractions of the Vessels more brisk, by which, Digestion will afterwards be better performed, and an Encrease of the Bloods Quantity, and consequently of its Viscidity thereby prevented. But in the latter Intention it seems to have the most Efficacy, because it never fails to cure for some time, and so suddenly that it cannot be expected in so short a Time, it should have done it by the first.

And that the *Bark* is very Efficacious this way, *viz*; in drawing up the Fibres, and giving a greater Firmness to the Solids of the whole Body, is farther confirmed by its Effects upon such who are subject to sweat too much, where it as effectually cures as in an *Ague*. For this we are certain is done by straitning the Fibres, hardning the Muscles, and thereby enabling them to break and digest the Fluids far enough, to throw off that overcharge by insensible Transpiration, which before went off by Sweat.

And this Effect of drawing up the Solids, is brought about by the *Bark*, by its astringing and corrugating the Fibres, where-soever it touches them throughout its whole Passage from its first entrance into the Stomach, to its Discharge out of the Body. That it acts as a *Stimulus* upon the Stomach and Guts, cannot be questioned when it is considered how often it irritates them to a Discharge of their Contents, and goes
off

off as a *Cathartick* ; but then very much losing its Efficacy in putting by the Distemper. Its curing also or putting by a Fit by one large Dose only, taken about an Hour before its time of coming, is a further Confirmation that it does it only by drawing up the Solids into a straiter Tone, and preventing the Eruption of the obstructed morbid Matter into Action.

If then it has so much Efficacy as an astringent in the Stomach and Guts, where the Fibres are so much guarded by their natural *Mucus*, which is always in great Plenty lodged upon them, with how much more Force must it needs act in the same manner upon the Solids when it is brought into much smaller Vessels, both as it passes into the Blood, and when it comes there ; for where a Particle in the Stomach chances to strike against a Fibre once, when it comes into one of the capillary Vessels, is more likely to do it a thousand Times, therefore as the Blood comes to be pretty well charged with these Particles, the Fibres in all Parts are corrugated and shortned at once, whereby the whole Body acquires such a Strength and Firmness, as will not only not admit of the Attacks of the morbid Matter, but such as frequently likewise occasions its Attrition and Expulsion quite out of the Body.

And here I cannot but just take Notice, how little need there is with Dr. Cole, who has drawn out his Conjectures upon these Inquiries into an incomprehensible Fineness, to look for any other Scene of Action, (as he calls it) of the *Bark* than what I have here assigned ; for to carry it through that intricate Secretion which is made in the Brain into the Nerves, which he argues to be tubular, and pleasantly enough calls the *America* of the *Microcosm*, not only to me seems needless in order to account for this Distemper, and the *Bark's* curing it ; but also goes too far from those Evidences, which in Physical Searches ought always to be kept in View.

But the greatest Difficulty that yet remains, is this, how it happens that this Distemper so frequently returns, after a Cure by the *Bark* ? to which I answer, because the *Bark* has no Efficacy but in Substance, so that as soon as it is all thrown off, the Body returns to the same State as before. And this Opinion is fully confirmed by common Practice, whereby we are certain that no clear or clarified Tincture can be made of it which will Cure, let it be made with never so much Art and Contrivance,

When

When therefore an *Ague* happens upon, or brings a weak thin *Crisis* of the Blood, the Cure made by the *Bark* lasts no longer than while it remains in the Blood, and that *Tensity* which it gave to the Fibres continues. In such Constitutions therefore, or when a Person is brought into such an ill Habit by a long Continuance of this Distemper, there is another Intension also to be answered, and that is, to restore the natural *Crisis* of the Blood, and if this be neglected a lasting Cure will never be made. Is it not then very much to be wondred at? that, let this Distemper return never so often upon the *Bark*, yet the same shall be repeated upon every Return, and sometimes till the Patient is sent out of the World; whereas when it once comes again after its Use, nothing is more certain than that something else remains to be done, which cannot be expected from the Virtues of this celebrated Remedy.

After all then, if something else can be found out, which will answer the two former Intentions, and the latter too at the same time; I hope it may be allowed to take Place, even of the *Bark* it self: And that there are such Things I am fully convinced by my own Experience, for in abundance of Instances of this Distemper, and some of them above two Years standing, (unless now and then a few Intervals for about a Fortnight upon taking the *Bark*) I have not failed once of making a confirmed Cure, and without the Assistance of one Grain of this Remedy.

But after talking thus big, I think my self obliged to give an Account, by what means I pretend to such mighty Matters: In the first Place I renounce all Pretensions to any *Specificks*, or *Medicinal Secrets* herein, being fully assured that the Art in curing any Distemper, consists not in barely finding out the Virtues of Medicines, but in understanding the true Oeconomy of a human Body, and knowing how to apply them.

Where the *Crisis* and Temperature of the Blood remains good, (although an Obstruction of the perspirable Matter hath encreased its Quantity, and occasioned an adventitious Viscidity, or whether this Cause first arises from a Relaxation of the Solids and an *Ague* ensues, the *Bark* in Time is sufficient; but if after about Fourteen Days it returns, it's a certain Sign also the Blood wants mending, and in such Cases after Vomiting, the common *Bitters* with *Aromatics*,
Astringents,

Astringents, Steel, or any warm generous Medicines, according to the Strength, Age, and Constitution of the Patient, never yet deceived me, although herein sometimes I have found necessary the assistance of a conformable way of living, as brisk Exercise as much as can be endured without Sweating, and a Diet that is warm, spirituous, easy of Digestion, and what Sanctorius calls easily perspirable, in which Flesh is better than Fish; roasted better than boiled; every thing high seasoned, excepting with Salt; strong stale Beer, old dry Wines in moderate Quantities, are preferable to small and new Liquors. But all these Things are to be managed with Care and particular Directions, and in such a manner as always to fall in with the Intentions of Cure; And I cannot but sometimes entertain a Belief, that this Distemper, by a Person thoroughly apprised of its Nature and Causes, might be cured by as different Ways and Means, as any one Distemper besides, notwithstanding an unaccountable Biggotttry to the Bark has drawn Persons into the Use of that only. But as to Chalyliated Bitters, especially after the Fit is once put by thus much I have to say farther of my own Knowledge, that by them I have seen Persons, not only thoroughly recovered from their Agues, but also from the Borders of the Jaundies, Dropsies and other Stubborn and often fatal Distempers, which their long Continuance are very apt to bring People into. How such Means as these not only take away an aguish Diathesis but restore also a Person to a sound Health, needs no Explanation, to such who are conversant in these Enquiries.

But before I quite close this Digression, it will be worth the while to Enquire into the Reason why an Encrease of any of the sensible Evacuations, or Phlebotomy soon after a Cure is so apt to Return the Distemper; and this the *Sanctorian* Doctrine admirably accounts for. For in several of these Aphorisms, it hath already been proved, that an Encrease of one Evacuation, will always be a Means to lessen the rest, when therefore a greater Quantity than what is natural is drawn off by Stool, Urine, Sweat, or the Quantity of Blood is lessened by Phlebotomy, a great deal of that which should go off by insensible Perspiration cannot but be diverted, the cutaneous Passages lessened in their Capacities, the Quantity of Blood in Time encreased, and consequently its Viscidity, and a Return of the Distemper must follow; and upon this Account only, it is sometimes
that

that an Ague is so difficult to be perfectly cured, because where it hath continued long, Nature has been so much used to an Encrease of the other Evacuations, and throwing off its Overcharges by the Crisis of every Paroxysm, that the cutaneous Passages are closed too much, to be brought easily to their natural Discharges, whereupon as soon as the Efficacy of a Medicine, which for some Time has brought all things to Rights is over, or whensoever by any external Cause there happens an Encrease of the Quantity of the Fluids, the Overcharge will run off by the sensible Evacuations, and lessen the Quantity which ought to be insensibly perspired, as before.

A P H. XXXVII.

An Hours Sleep at Noon after Meal, sometimes occasions the Body insensibly to perspire a Pound, and sometimes half a Pound: a Pound when any of the perspirable Matter of the former Day hath been retained; when not, but half a Pound.

EXPLANATION.

Dr. *Lister* commends this as a most excellent Remedy in weak People for imperfect Digestion, and there is a great deal of Reason why it should be of Service, because such an additional Help, every Day may compensate for the Deficiencies of the last Nights Perspiration; but they must not be too free with this Practice, who are inclined to grow fat: If likewise the Obstruction of the perspirable Matter the Night before has been considerable, there may be a great deal of Danger; for,

A P H. XXXVIII.

If any of the former Days Perspiration is retained, and not altogether carried off the next Day by Sleep after Dinner, immediately upon waking there is perceived a great Weight of the Head, attended with Pain.

EXPLANATION.

Because by such Sleep, if the obstructed Perspirable Matter does not get clear off, it will hinder likewise the Exhalation of that Supply which is made by the last Meal, and render the Obstruction more obstinate, by admitting still more into the excretory Passages before there is Room made for it to get thorough; which cannot but produce all these Symptoms which usually appear upon the first Attack of a Fever; as Pain and Heaviness of the Head &c. whereas was that Sleep omitted until the following Night, by that time with a little gentle Exercise might the obstructed Matter be so much farther dislodged and broke, as to be fitted to get off through its proper Passages.

A P H. XXXIX.

If four Hours after falling asleep the Food corrupts, immediately afterwards these two Inconveniences arise, Watchfulness and a Hindrance of Perspiration.

EXPLANATION.

Corruption of Food hath been already explained to be such a fermentative Motion of its Parts, as disposes it to Putrefaction; which we find it does frequently fall into, and thereby produce violent *Diarrhea's*; and of Coughs and all other bad Symptoms, but more especially does it disorder the Business of Perspiration, because it cuts off the Supply, during which time, the cutaneous Pores are apt to subside and lose their proper Capacities, whereby that Discharge may afterwards be again restored to its natural State.

A P H. XL.

Nothing more frequently interrupts Sleep, than a Putrefaction of the Food: such is the Sympathy between the Stomach and the Brain.

EXPLANATION.

By the Sympathy of any one part with another, is to be understood only that Communication of Nerves, by which when one is affected, the other is so also ; thus when any thing affects the Coats of the Stomach with any troublesome Vellications, the Brain becomes disturbed thereby, because the Nervous Threads are so numerously dispensed from one to another, that when drawn at one End, that Motion will be always communicated to the other ; and by this Means the Solids of the whole Body, according to the different Contextures and Communications of their constituent Fibres, in the like manner sympathize with one another ; and all of them so much with the Brain, that any considerable Uneasiness in any other part, although the most remote, cannot but affect it and hinder Sleep, as much as when the Disturbance is at the Stomach only:

A P H. XLI.

Sleep in Winter time, is more serviceable than in Summer ; not because the Bowels are warmer, or Sleep longer ; but because early in the Morning the Body is actually warmer, and as such perspires most, but in Summer time it is really colder.

EXPLANATION.

See *Explanation to Aphorism XXVII. Sect. II.*

A P H. XLII.

Briskness and Activity after Sleep, denote that the Body hath that Night perspired near three Pound, for the most Part.

EXPLANATION.

This is the Quantity which *Sanctorius* generally computes to go off by Perspiration in an healthful Person in the Space of one Night therefore a Person finds himself

O

brisk

brisk and lightsome, it must needs be a good Sign that no part of the perspirable Matter hath that Night been retained, but that the whole Quantity is exhaled.

A P H. XLIII.

When the Head seems light after Sleep at Noon, it is a Sign that no part of the former Days Perspiration hath been obstructed.

E X P L A N A T I O N.

For the same Reasons as in the foregoing.

A P H. XLIV.

Sleep universally moistens both the inward and outward Parts, because it attenuates the perspirable Matter, and dispenses it when so broke thorough all the Members.

E X P L A N A T I O N.

What Alterations are effected in the Body by Sleep may be collected from what has gone before in several places; and it more particularly appearing that thereby all the Solids are in a more relaxed State than when awake, its Effects herein mentioned must necessarily follow, because such Relaxation admits of an Enlargement of all the Secretory Passages, by which such Juices as are fitted to be separated by them, will pass them at that time more plentifully, and will thereby be more freely dispersed through all the parts of the Body. The perspirable Matter also then going off from all the Parts internally, makes a kind of Dew, and gives them that suitable Moisture, which fits them the next Day the better to perform their respective Offices: For as too great a Moisture injures the Springs of the Fibres by rendring them too flaccid, so too little will keep them dry and crispy, and therefore a convenient Quantity of Moisture is not only serviceable but necessary.

A P H. XLV.

When a Person is awake, a greater Quantity of Blood not yet prepared for Perspiration, is carried from the Center to the Circumference, than when asleep.

EXPLANATION.

The Motion of the Blood, is certainly greater in the Day^s time than when asleep ; because the Heart then, as all the Solids, is more contracted, and consequently it's Systole is stronger, and propells the Blood through the Arteries with greater Force ; all the Parts of the Blood therefore are then more confusedly carried along, and a grosser Matter thrown upon the smaller Vessels in the Extremities than in the Night, when by the Remission of its Velocity, the finer Parts only get thorough the smallest Passages.

A P H. XLVI.

By Sleep the Humours are concentrated, and the exterior Heat is united with the innate, Thirst is removed, unless Choler predominates ; the Blood is converted into it's second Juices, and the Body is rendered lighter.

EXPLANATION.

This *Aphorism* is expressed with a great deal of Obscurity ; by *Concentration of Humours*, and *uniting of the exterior with the interior Heat*, I cannot find out what is meant, but it may perhaps be my own Fault, that I am not yet acquainted with all the Blessings that Sleep procures. The Thirst is abated by that universal Moisture, which has already been proved to arise and be universally distributed in the time of Sleep ; to this Purpose also may be very conducive that Enlargement of the Secretions, which is made at this Time ; for by this means likewise, those Salts which before hung about the Secretory Ducts, and by their Irritations excited the

the Sense of Thirst, are washed away by the circulating Juices, and more plentifully thrown off at their proper Outlets, the Kidneys. Although in bilious Constitutions indeed where the Blood abounds with great Quantities of saline stimulating Particles, the Moisture raised may not be sufficient for this purpose. By the second Moistures (*secundas Humiditates*) he seems to mean the perspirable Matter, and so think it the most considerable Secretion that is made from the Blood; but much the greatest Part of that which perspires immediately from the Blood passes into other Juices, and with them performs a great many Circulations, and undergoes several Changes before it is fitted to go off that Way. How the Body becomes lighter by Sleep, abundantly appears from several of the foregoing.

A P H. XLVII.

By Sleep the Animal, by watching the Vital and Natural Spirits decay.

A P H. XLVIII.

By watching, the animal Spirits are strengthened, but the vital and natural weakned.

A P H. XLIX.

By Sleep, the inward Parts grow warmer and lighter; by watching the outer Parts.

E X P L A N A T I O N.

I must confess my self not Master of enough Penetration, to enter into the two former of these *Aphorisms*, notwithstanding I am sensible that much hath been said by a great many others as well as *Sanctorius*, concerning this Distinction of the Spirits into *animal*, *vital* and *natural*; yet such is my Unhappiness, that I never yet could understand half the fine Things that have been advanced hereupon: Indeed I find my self able to form some *Idea* of a very thin volatile Matter arising from a due Motion and Preparation of the Blood, and dispensed throughout the Solids of the whole Body, in order for
their

their Invigoration and the Maintenance of their Springs; and if this be the natural or vital Spirit here spoken of, I think it very reconcileable with the *Aphorism*; for it hath already been proved that this Juice, Fluid, or Spirit, whichever it is called, is supplied chiefly in time of Sleep; and that the Actions of the Muscles when awake, make a great Waste of it, and bring on a necessity of frequent Recruits. But what that is which is dignified peculiarly with the Name of *animal Spirits*, in Distinction from the other, I cannot guess, unless by it is meant the Mind or Soul, by which a Person is said to think, reason and reflect; but then I can no more conceive how this is properly said to be weakened or strengthened by Sleep or watching, than imagine how the *Ballance* comes to make any Discovery about it. It is indeed within every ones Experience, that this Power or Faculty is not always alike vivid and clear, and that it is much influenc'd by what passes in the Body; but then contrary to the *Aph.* it is most commonly able to exert it self with most Strength after a sound Sleep; and upon long watching, again grows dull and confused.

The Contents of the XLIX. are true with this Restriction, that the inward Parts are warmer and lighter by Sleep, comparatively more than the outer, and the outer more by watching than the inward: For in Sleep the Muscles of the Limbs lye inactive, and the Pulsation of the Heart, and the Motions of all the Parts serving to carry on the Circulation, and the Performance of all the vital Functions, then continuing as well as when awake; the inner Parts during Sleep, which are concerned in these Motions, cannot but be comparatively warmer, and lighter too by their continual Discharge of the perspirable Matter, than the outer Parts which are at rest. But for the same Reason when awake, the extream Parts will have this Advantage from their greater Exercise.

A P H. L.

By too much Sleep, both the inward and outer Parts grow cold, the Humours are obstructed, and rendered Imperspirable, and the whole Body heavier.

EXPLANATION.

By the very same Means by which moderate Sleep does Service, too much of it proves injurious ; because too much Relaxation overcharges the Nerves with too thick and too large a Quantity of Juices, which instead of making them fitter for Motion, clogs them, and renders them less capable of recovering their Springs afterwards ; and when once the Solids fail, the Fluids of Course slacken in their Motions, by which the natural Warmth decays, and the Flesh grows cooler, and themselves also becoming more Seizy, they suffer the less to pass off by insensible Transpiration, and consequently make Bodies heavier.

A P H. LI.

Bilious Constitutions are very much hurt by too much Sleep, not because the Recrements of the third Concoction do not go off by Perspiration ; but because they are very acrimonious, and thereby affect the Head and Bowels.

EXPLANATION.

Every thing which by its Acrimony stimulates the Nerves, must be attended with a great many Consequences prejudicial to the Constitution : And the Choler is known to be a hot stimulating Fluid, wherefore they who are overcharged with it, suffer most by much Sleep, because at that time it is derived with the other Juices to the Nerves, and in such Quantities, as to produce the Effects herein mentioned : And undoubtedly it is something like This, which pricks and irritates the Nerves, and occasions those Starts some People are subject to when asleep.

A P H. LII.

In those who sleep uncovered, Perspiration is more obstructed, than in such who go naked when awake ; both because in Sleep the Body is without Motion

Motion, and because the Heat of the external Parts retires inward.

EXPLANATION.

The former Reason, that the want of Motion occasions the greatest Injuries, from obstructed Perspiration in a sleeping Person, is very manifest; for the Actions and Attritions of the Muscles in the Person awake being greater, may in time digest and break the obstructed Matter small enough to pass it off; whereas a small Matter retained in Sleep, for want of such Action will be continually encreasing until it occasions very great Disorders. But for the Heats retiring inwards, I am obliged still to own my Ignorance.

A P H. LIII.

Unusual Watchings, render the Body the first Day heavier and weaker; heavier because after the Evacuation of the perspirable Matter, there will be left a Crude Juice heavy both in it self, and by accident; weaker because where there are Crudities, there will be no Assimilation, and consequently a Decay of Spirits.

EXPLANATION.

Whoever considers the Necessities and Advantages of Sleep above recited, will soon perceive how too much watching will defraud the Solids of that due Supply of Juices or Spirits, as is absolutely necessary to enable them rightly to perform their several Offices; and therefore of Consequence must the Body grow heavier, by want of a due Digestion, and an obstructed Perspiration; and the Limbs also weaker for want of Strength and Spirits: (which he means by the Juices being accidentally heavier, that is, besides their own absolute Weight, they will also be heavy with Relation to the Perception or Sense a Person has of them; which always is in proportion to his Strength) For the same Reasons also, a due Assimilation of nutritious Matter with the Substance of the Body will be defective,

A P H. LIV.

In seven Hours Sleep after long watching, the Quantity that perspires, will be encreased about a Pound.

EXPLANATION.

Perspiration is then encreased, because by the long State of Contraction of the Solids, and the continual Attritions whilst awake ; there will be a greater Quantity of the perspirable Matter ready to pass off, than usual, and therefore as soon as the Body is relaxed by Sleep, and the Diameters of the excretory Passages are lengthned, it exhales much more plentifully than at other times, insomuch as according to *Sanctorius's Ballance* to exceed by about one Pound in seven Hours.

A P H. LV.

Continued Watchings renders a Body lighter, not by a greater Perspiration, or any encrease of the sensible Evacuations, but because the Recruit is not proportionable to the Wast that is made at such time, of the Substance of the Body.

EXPLANATION.

The continued Attritions of the Parts which are much greater, as was said before, when awake than in Sleep, will wear off more of the Substance of the Solids, and lessen their Bulk, than can be recruited without the help of frequent Relaxations by Sleep.

A P H. LVI.

The Body in a Morning is lightest, and perceives it self so : It is lighter than at any other time, because about three Pound of perspirable Matter is gone off the preceding Night ; and it perceives it self so, both because it is really lighter

lighter, and because by a good Digestion of easily perspirable Meats, the Strength is renewed.

EXPLANATION.

The Distinction before taken Notice of between *absolute* and *relative* Weight, is here to be regarded, and then it will need but little Explanation; for we know already both how the Body becomes to be absolutely lightest in a Morning, by the wast of some Pounds in Perspiration; and how it perceives it self so by an Encrease of Strength, from a fresh Recruit of Spirits, dispensed to the Solids in the preceeding Nights Sleep.

A P H. LVII.

The Body by unusual watching, may be rendered heavier, if the Food with which it is nourished, be difficult to perspire.

A P H. LVIII.

So very large are the Steams which arise from Persons in Sleep, that not only the distempered communicate bad Qualities to those who are well, but even the healthful in lying together affect one another.

EXPLANATION.

How far, and what Distempers are to be propagated by those Steams, would not only be a Business of Length, but Difficulty, to enter into here, especially to attempt a particular *Rationale* of the *Modus propagandi*: Although I believe very few are communicated this Way, but such as are only cutaneous.

A P H. LIX.

From Eating comes Sleep, from Sleep Digestion, and from Digestion a good Perspiration.

EXPLA-

EXPLANATION.

All these have frequently been explained above.

A P H. LX.

Marmalet, not immediately after Supper, but after the first Sleep, provokes Sleep, so that it is not drank after.

EXPLANATION.

I cannot conceive how drinking after it, should hinder its procuring Sleep, unless by deluting the Flavour, and rendering it less grateful to the Stomach. But how it provokes Sleep at all I cannot easily imagine, any more at least than any other thing does, which proves serviceable to the Constitution, and preserves a good State of Health, which must necessarily be supported by convenient Returns of Sleep, which is confirmed by the following

A P H. LXI.

Marmalet with Cinnamon, strengthens the Stomach, by which Sleep is promoted.

A P H. LXII.

A moderate Quantity of Wine and Garlick excite Sleep and Perspiration; but if they are used too plentifully, they hinder both: for they turn Perspiration into Sweat.

EXPLANATION.

The Difference between Perspiration and Sweat, has been before taken Notice of in the first Sect. under Aph. XXI. and how a moderate Meal excites the former, and an Overcharge hinders it, need not be again repeated. Spirituous Liquors taken in too large Quantities, and any such things as plentifully

fully raise themselves upon Digestion into Vapour, may frequently go off in such large Quantities by the cuticular Discharges, as to force along with them a great deal that cannot well be spared, by which Means the Fibres are afterwards left weaker, and not so able as before to carry on the Business of Digestion and Perspiration.

A P H. LXIII.

He who concocts and digests well, will be long liv'd: Concoction is perform'd during Rest and Sleep; and Digestion by Watching and Exercise.

EXPLANATION.

In this *Sanctorius* distinguishes between Concoction and Digestion, by the former he seems to understand only that Alteration which is made in the Fluids, by the mutual Actions and Impulses of their Constituent parts upon one another; but by the latter, that which is made upon them, by the Actions and Attritions of the Parts which contains them; and with this Distinction the *Aphorism* holds good: For it is certain that during Sleep the Fluids are not so swiftly agitated by the circulating Vessels, and therefore have more Liberty to obey the Dispositions of their constituent Parts, and fall into an intestine or fermentative Motion, so far as thereby to become altered in their Cohesions and Degrees of Fluidity, and put on such new Forms and Dispositions, as are more suitable for those Purposes they are further designed for; but while waking their circulatory Motions are too rapid to allow of their obeying such Dispositions, and their Generation of new Cohesions; yet notwithstanding this, they are at such times broke the finer, by the continual Contractions and Attritions of the Vessels, and thereby rendered more fit when Sleep comes, to fall into them, and form Fluids of different kinds and uses, according as the several Exigencies of the Oeconomy require. A further Account may be had of this Matter from *Guiljelmini's Prælectio, de Circulatione & Natura Sanguinis*. In this Sense is to be understood the following

V o

A P H. LXIV.

If a Weariness remaining after Sleep is removed by Exercise, the Fault is owing to Digestion, and not to Concoction.

EXPLANATION.

Because that Weariness must have been occasioned, by an Obstruction of some indigested perspirable Matter; which Exercise the next Day may break small enough to pass off. This View of the Matter likewise furnishes us with some good Rules how to manage our selves after Eating, especially in weak Constitutions; for such ought not to sleep after Meals but a very short time, because otherwise the Food would pass the *Lacteals* and get into the Blood without being broke enough first in the Stomach, to be afterwards managed by the much weaker Attritions of the Vessels which circulate it; whereas a little moderate Action after Eating, might perform a thorough Digestion of it, before it gets so far.

A P H. LXV.

When we rise with our wonted Weight, but with greater Weariness, unless that Weariness be removed with usual Exercise, it denotes a Collection of Crudities, a Corruption of the Food, or too great a Use of Venery.

EXPLANATION.

The two former, *viz.* Crudities and a corrupted Food, do the same by an additional Weight, both of them hindring Perspiration, in the manner already explained, as the latter does, by weakning the Strength and Vigour of the Solids; for it hath before been made appear, that a Diminution of Strength, is the same as to the Sense of Perception that arises thereupon, as a real Encrease of the *absolute* Weight of the Body.

A P H.

A P H. LXVI.

Immoderate Sleep after Dinner, injures all the Bowels, and obstructs Perspiration.

EXPLANATION.

Although a little Sleep at such times upon a full Stomach, may be of Service by letting out what did not sufficiently pass off the Night before ; yet if it be continued too long, there will such a Quantity of undigested Matter follow, as will be too gross to pass ; and consequently plug up the Excretory Ducts, and thereby occasion very considerable Disorders.

A P H. LXVII.

Weariness after Sleep, is removed by such Means as promote Perspiration ; of which sort are Abstinence, Exercise, Watching and Anger.

EXPLANATION.

Because such Weariness always proceeds from an obstructed Perspiration ; the first of these removes the Load, by cutting off its Supply, while the other by the Attritions of the Muscles, in time break it small enough to go off by the Skin.

A P H. LXVIII.

To Sleep with the Body stretched is hurtful ; but with the Limbs drawn up beneficial : for the closer Positions of the Bowels assists Concoction, whereas to be more distant hinders it.

EXPLANATION.

An extended Posture cannot so much favour the Relaxation which is necessary in Sleep, as when the Limbs are drawn up ; and besides in the latter Position of the Parts of the Body, there is not so much of the Surface exposed to the Air,
and

and thereby is the Skin kept warmer, the Pores opener, and consequently the more will by such Means go off by Perspiration.

A P H. LXIX.

If cool Sweat happens to healthful People after Sleep, it is a Sign that they have perspired too little ; and that if it continues, in time they will have the Gout.

EXPLANATION.

By this also it seems, the Gout may in some Part owe its Rise to a Perspiration not well proportioned to the other Evacuations, and the Quantities taken in : and that this Defect of Perspiration which makes Way for this Distemper, is owing to a weak Texture of the Skin, whereby although a Sufficient Quantity is prepared for Exhalation, yet in its Passage it is apt to lodge, and occasion a Moisture or Clamminess upon it.

A P H. LXX.

By too much Sleep and hard drinking, the Strength is suffocated ; by too much Watching and Exercise it is dissolved ; for all these lessen Concoction, and a Diminution of that will also lessen a due Perspiration.

EXPLANATION.

This is but just the same, but only expressed in more obscure Terms, as has often been said before ; and that whatsoever hinders Digestion, does also hinder Perspiration, by this Time needs neither Proof nor Explanation.

Medicina Statica.

S E C T. V.

Of EXERCISE and REST.

A P H O R I S M I.

TH E Body insensibly perspires less in violent Exercise, than in a Morning Nine or Ten Hours after the Time he supped.

E X P L A N A T I O N.

Violent Exercise so much encreases that agitative or confused Motion of the Blood, taken Notice of under *Aph. XXII. Sect. III.* that none of the Secretions are then so regularly made as at other Times, and consequently the Evacuations must be disturbed, but more especially that of insensible Perspiration, because the encreased Velocities of the Fluids, occasioned by greater and Stronger Contractions of their Vessels, will so blend the Matter which otherwise would insensibly go off, with what is not fit for those Passages as to retain a great deal of it in the Body ; insomuch, that although by the same Cause, a great deal which is too gross for Perspiration is expelled, yet it is not in proportion to that Quantity retained as would have passed without such Exercise, and therefore the Body must be injured by it.

A P H. II.

That which passes the Skin by violent Exercise, is the perspirable Matter and Sweat together ; but as it is violent, it raises a great deal of undigested Juices ; for it seldom happens that so much well digested perspirable Matter is at once collected in the Body as is the Quantity by Violence expel'd.

EXPLANATION.

This seems to carry some Contradiction to the former, unless it be considered that the Time there fixed, for the Excess of the Quantity perspired, above what is expelled by Exercise, is in a Morning after a perfect Digestion, at which Time it already abundantly appears, a vast deal more goes off that Way than any other ; that Digestion most conducive in the Preparation of it going on much more regularly in Time of Sleep. See *Aph.* I. II. VI. of the foregoing Section.

A P H. III.

Sweat is always from some violent Cause, and as such, (as *Statick* Experiments demonstrate) it hinders the insensible Exhalation of the digested perspirable Matter.

EXPLANATION

For the Difference between the Matter of Sweat, and that of insensible Perspiration. see *Aph.* XX. XXI. Sect. I.

A P H. IV.

A Body perspires much more plentifully during a quiet Rest in Bed, than by frequent tossing about.

EXPLA-

EXPLANATION.

See *Aph. XC. Sect. I.*

A P H. V.

Chearful and Passionate Persons, are less fatigued with long Travelling, than those who are Fearful and Melancholy ; because the former perspire much better than the latter.

EXPLANATION.

The Affections and Passions of the Mind, have a very great Power over the Animal Functions, as likewise are they themselves very much to be altered by what passes in the Body : Concerning which we shall see further in the 7th Section.

A P H. VI.

They who feed quickly after hard Exercise, injure themselves thereby ; because to be weary and filled with Meat at the same time, will much hinder Perspiration.

EXPLANATION.

It has been proved *Aph. XLIV, XLV. Sect. I.* that when a great Waste is made by any violent Cause, the succeeding Meals will be very apt to pass into the Vessels not sufficiently digested, and thereby obstructing their capillary Branches, hinder Perspiration, and also in *Aph. XI. Sect. III.* that a full Stomach has the same Effect ; where therefore all these Causes concur, viz ; a Lassitude, Emptiness, and a full Stomach, it is no wonder that the above-mentioned Inconveniency ensues.

A P H. VII.

Exercise from the Seventh to the Twelfth Hour after Eating, wafts more insensibly in the Space of one Hour, than in three Hours at another Time.

EXPLANATION.

In so long a time after Eating, the Food will have got into the Arteries, upon whose due Contractions its further Digestion (in order to Perspiration) altogether depends; whatsoever therefore assists those Contractions, must likewise promote that Digestion, and encrease Perspiration, and this due Exercise does with the greatest Advantage; as will further appear by several of the following. Here therefore the Case is vastly different from the foregoing, where the Food is taken into the Stomach, at a time when the Body has been exhausted of its Spirits, and wearied by a preceeding Exercise.

A P H. VIII.

That insensible Evacuation which is made by violent Exercise, hinders the future Supplies from amounting to the Quantity wasted; and so much that if it be long continued, the Body will be wasted so far, as to endanger a Consumption.

EXPLANATION.

A Continuance of Exercise beyond the Strength of the Constitution, will not only waste as much as is daily supplied, but also wear away a great deal of the Substance of the Body, and thereby sink both its Strength and Bulk. We see therefore Exercise it self, which under the two following *Aphorisms*, will be found of vast Service, both for the procuring and preserving a good Constitution, must be brought under proper Restrictions, and ought not any more than an efficacious Medicine to be used, but with the

utmost Prudence and Caution ; especially until a Person has acquired such a Strength and Firmness by it, (which a great many do,) as to bear without Injury almost all the Changes of Life.

A P H. IX.

By Exercise Bodies are rendered lighter; for all the Parts especially the Ligaments and Muscles, are cleared of their Excrements by Motion: the perspirable Matter is fitted for Exhalation, and the Spirits are rendered finer.

EXPLANATION.

There has been so much said by a great many late Authors, of the Consequences and Advantages of Exercise; and so far may be collected from what has herein been already said, that it is almost needless to enter here into a very particular Account of the Effects of it; but as it is of such mighty Importance and Efficacy, in changing a Constitution either for the better or worse, I cannot easily deny my self a short Digression, about the mechanical Construction of a distractile Fibre, without some Knowledge of which, it is impossible to have any clear Notion of It. This indeed I hinted something about under *Aph. VIII. Sect. II.* but then waved it in Consideration of the Length I was aware it would carry me into; but finding upon second Thoughts, this Section to turn so much thereupon, I beg the Reader's Excuse for resuming it here.

DIGRESSION III.

Concerning the Elasticity of an Animal Fibre.

It has been already proved in the *Introduction*, that a human Body as it comes under the Notices of a Physician,

is meerly a Machine, and that whosoever goes any other Way to enquire into its Constitution, with Regard to its make, and the Regulation of its Disorders, abuses his Faculties, and leaves the only means to which his Maker has fitted him, of receiving any satisfactory Knowledge therein. Considering it therefore in this View, it very naturally comes to be divided into *Solids* and *Fluids* : The *Solids* are vascular, and have continually propelled thorough them some Liquor or other, necessary for the Purposes of the Machine. And these circulating Fluids are of different kinds, resulting from the different Agitations and Velocities impressed upon them, by the Vessels which circulate them. And in this View they have a necessary Dependance one upon another, that the Distraction and Power of Restitution in the Vessels, is owing to their being duly moistened by some convenient Fluid, separated and dispensed to them from the common Promptuary of all the animal Juices, the Blood ; as likewise does that due Constitution of the Blood, which fits it for the Cession of some of its Parts for that Use, depend upon its certain Degrees of Fluidity, which always are as the Contractions of its circulating Vessels : But yet even in this, the Solids have the principal Share, because as that Power by which the Blood is preserved in a due Constitution, is derived from its self, that is of bestowing upon the Solids a Juice necessary for the Preservation of their Springs ; yet that Constitution enabling it to afford such a Power, being primarily derived from the Actions of the Solids open it, the chief Spring or Rise of Motion is in the Solids. To know therefore the most ready Ways of altering the Constitutions of the Fluids, is to find out the most convenient and effectual Means of influencing the Contractions of their Vessels : But it is not likely this should be done, without knowing first upon what Texture and Mechanism of Parts, their Powers of Contraction and Distraction do depend ; whereby when they are once put into Motion, and filled with a convenient Fluid, they may maintain themselves therein, until they are actually worn out, or their Textures by some external Cause destroyed.

But here it may be necessary to advertise the Reader, that the Mechanism here sought after, is very different from that, whereby the Muscles are continued to move any Part of the Body ; for the latter is voluntary, and sub-

subservient to the Operations and Dictates of the Mind; but the other is such only, as regards the Motions of those Parts, which are necessarily employed in carrying on the vital Offices, which are no Ways to be stopped or increased by Volition, but go on to move whether in Sleep or waking, in the same Manner, and by the same Contrivance of their constituent Parts, as when they were first put into Motion, until by some external Cause that peculiar Contexture is destroyed, and Death ensues. As the continual Dilatations and Contractions of the Heart and Arteries, by which the Blood is maintained in its circulatory Motion, can no Ways be either intended or remitted by the Power of Thought, so that peculiar Mechanism, by which they continue those Motions when once begun, must be something very different from that Disposition of the Muscles, which enables them to rest or move, just as the thinking faculty pleases to direct them; the Motions of the former being the necessary Result of the peculiar Dispositions of their component Parts, and the latter only such as they fall into according to the Determinations of an external Agent. This last Enquiry, hath employed a great many Heads, and produced great Variety of Hypotheses and Conjectures, but very little to the Satisfaction of such who have been unprejudiced, and sincere Searchers after Truth, until Application hath been made to those proper and only Means, by which the Operations of all physical Agents are to be determined, which is upon mechanical Principles; and upon these, *Steno* and *Borelli* have had the Honour of making a very good Beginning, upon whose Foundations, Dr. *Bernoulli* of *Basil*, (whose Account of *Muscular Motion* printed in the *Leipsick Transactions* in 1694, hath been lately published in *London* by Dr. *Mead* under the Title of *Dissertatio de Motu Musculorum*,) and since him Dr. *James Keil* has improved much to the Satisfaction of those who are not to be contented without such Conviction and Demonstration as the Nature of such Things will admit of, and do require.

It is well known that any Membrane or Vessel, may be separated and divided into very small Fibres or Threads, I mean when it is just taken out of the Body, and that these Threads may be drawn out a considerable Length beyond that which is natural to them without breaking, and that when such external Force which so distracted them is removed, they will again restore themselves to their natural Dimensions,

sions. It is further also manifest, that this Property is preserved in them by a convenient Moisture, because if one of these Threads be dried, it immediately looses it, so that upon the Applications of any Force to stretch it, it will break; as likewise will its lying soaked in Liquor too much, render it so Flaccid, as to destroy also its Power of Restitution when distended. Now what is exactly the constituent Texture, or what are the Shapes, and what is the Arrangement of those Parts of which an animal Fibre is composed, I dare not be very positive in asserting, because they are too fine to be perceiv'd by the Eye: But if such a Disposition of a determinate set of Particles can be found out, as will answer all the Appearances of one of these animal Threads, I hope it will not be looked upon too bold a Presumption to conclude, that something very like this also must be the Contexture of their Parts, so far at least, as to allow the natural Consequences of the former to be a just Foundation for the other

The Observations and Experiments which have been made of late, but more particularly by Mr. Boyle, about the Contrivance and Properties of a *Syringe*, are what none can be unacquainted with, who are but indifferently conversant with Books, as likewise the Reasons upon which that *Phenomenon*, of the Difficulty of drawing back the *Embolus*, when the Pipe is stopped, depends; and the Necessity of any Liquors following it, wherein the Pipe is immersed: and this, with the Reasons of it being well considered, it will be found, that all which is necessary for this Contrivance, is that the *Embolus* be so exactly adapted to the inner Surface of the *Barrel*, as to prevent any Air passing between them when it is drawn up; that it matters not what Figure the *Barrel* is of, so that the *Embolus* is well fitted to it. It easily therefore might be contrived to make a Case of *Syringes* wherein every *Barrel* may also serve as an *Embolus* to its exterior which immediately includes it. And with this View it is not at all difficult to imagine a continued Series of Particles so put together, that the inner may be moved and drawn upon one another, without suffering the Air immediately to enter into the Interstices made by their Distraction, whereupon as soon as that Force which drew them is removed, they will for the very same Reason as the *Embolus* of a *Syringe* rush up again into their former Contacts, as may further be illustrated by Figure 8. suppose *A. B.* two Particles touching one another in *e. f.* and *C. D.* two other., covering on the opposite Sides their

Contacts. It is also to be supposed that on the other Sides they are covered by other Particles in the same Manner as by *C. D.* so that the Places of their Contacts are on all Sides enclosed from the Air, or the Insinuation of any Fluid Body ; wherefore if *A. B.* by an external Force, greater than that of their Cohesion, be drawn from each other as far as *G. I.* and *H. K.* in Fig 9. as soon as that Force is removed, they will again run into their former Contacts in *e. f.* Fig. 9. that is if they are not drawn so far, as to bring their transverse Surfaces to coincide with *C.* and *D.* for then the Air, or circumambient Fluid will interpose, and prevent their Re-union. So that by this Contrivance, so much of *A.* and *B.* as is enclosed by other surrounding Particles, is as the *Embolus* of a *Syringe*, and the Particles surrounding them as its *Barrel* ; and therefore when *A.* and *B.* are distracted from their Contacts in *e. f.* it will be with some Difficulty, and when the distractile Force is taken away, they will again run up into their former Contacts, just as the *Embolus* of a *Syringe*, and for the same Reason.

Since therefore an animal Fibre has this Property of Distraction and self Restitution, it is very reasonable to suppose it to be owing to the same Contrivance and Disposition of its component Parts. I do not rigidly mean that they must needs be exactly of such certain determinate Figures, but something like this, whereby the Interstices of the interior Orders, may be covered by the exterior in such a manner, that when the Thread is distended, that is, when its constituent Parts are drawn from their transverse Contacts, neither the Air nor any other external Fluid, can get between them, so as to hinder their Re-unions, as soon as such force is withdrawn. That is if their Distraction, as was before said, be not so far as to bring their transverse Surfaces to a Coincidence with one another ; for then the circum ambient Fluid will interpose, that is, the Thread will be broke.

But besides this peculiar Arraignment of a determinate Set of Particles to compose the main Substance of an animal Fibre, endowed with the Properties above-mentioned, it seems not at all an unreasonable Conjecture, that into their Composition also enters a common *Capsula* or Covering, which assists in the wrapping up and holding together those *Fasciculi* or Series of Particles already described, not much unlike the *Periostium* of the Bones ; the Contexture of which

Covering, resembling that of a Net, cannot any ways hinder, either the transverse or longitudinal Distractions of the other Parts.

If this can then be allowed to be the Constructure of an animal Fibre, (in which Opinion also I am not a little confirmed, from what hath been advanced by Dr. *Clopton Havers* in his *Osteologia*, concerning that of the Bones and Cartilages, as well as from the above-mentioned [*Aph. VIII. Sect. II.*] Propositions of *Bellini*) it will next be necessary to consider what Requisites are needful to put them into that State which they are in, in a living Body, to shew how they are maintained in continual Motion, and what are the Consequences of it.

I. And first it is necessary to take Notice that all the Fibres in a living Body, are in a State of Distention, that is they are drawn out into a greater Length than they would be in, if separated from any Part, and taken out of the Body; which is easily demonstrated by any *Solutio Continui*, especially by any transverse Decision of a Nerve or Artery (which are altogether Compositions of these Threads we are speaking of) for immediately we see the divided Parts run up, and leave a great Distance between them, and the Fluids contained in them upon such Contraction, to be squeezed out; and this also makes it appear, that their natural Distractions are owing to some Fluids being propelled into the Vessels which they compose, with a Force greater than their Endeavours of Restitution, so far as to obtain a close Contract of all their transverse Surfaces, but yet lesser than that which is necessary to distract them, so far as to bring them to a Coincidence, for then as was before proved, the Vessels would break.

II. Next then this State of Distraction must necessarily leave *Vacuola* between all the transverse Surfaces, as between *G. I.* and *H. K.* in Fig. 9. and may be represented by the several Series of Particles, delineated by Fig. 10. which *Vacuola* will continue as long, as the longitudinal Surfaces of its component parts continue so close to one another, as to prevent the Insinuation of any foreign Matter how subtile soever between them: For the same Reason therefore as when the *Embolus* of a Syringe is drawn, and the Pipe is stopped, there must needs be continually a *Nisus Restituendi*, or an Endeavour of Contraction: There is also further this Necessity of being maintained in such a State of Distraction, because if

they

they were closely to touch one another in all Parts, they could not be put into and continue in those undulatory Motions which they are always in, in a living Body, without being altered both in their Figures and Contextures.

III But it being very manifest, that all the animal Fibres are continued by the perpetual successive Impulse of the Fluids, in such undulatory Motions, besides this Necessity of their Distraction, they also must be continually moistned with some convenient Fluid, because otherwise their continual Attritions against one another, would wear them out, and also render it difficult to move them. The Fluid likewise suited for this Purpose, must be very fine and subtile, because otherwise it cannot be insinuated into all the Interstices of the Fibres, without so far separating their Parts, as is inconsistent with that Contexture and Mechanism here laid down; the Parts also of this Fluid must not only be very subtile, but soft and yielding, whereby the Motions of the Particles against one another, may the better be maintained, and also, as by a Cement, that they may be prevented in their receding from one another in their longitudinal Surfaces, so far as to admit of the Insinuation of any foreign Matter between their transverse Surfaces, in such Quantities as to hinder their Reunion when Occasion may require it.

With this View of the Contrivance and Mechanism of an animal Thread or Fibre, we come by a very easy and natural Explication of the several Terms or Expressions, frequently necessary to be made use of in many places of this Book, and which likewise are to be met with very common in some late Writings, such as the *Distraction*, *Contraction*, *Vibration*, *Undulation*, *Tonick Motion*, *Concussion*, *Relaxation*, *Corrugation* and *Elasticity* of the Solids, all which are but different Ways of expressing the various Modifications and Dispositions of those *Machinule*, of which all the Fibres are composed.

Thus far then being granted about the Contexture of a Fibre, and the Requisites necessary for its Office, or the Continuance of its Motion in a living Body, it comes then to be considered how it may first be set in Motion, and by what Mechanism it afterwards is carried on. Let then a Fibre be described by R. S. Fig. 10, and in such a State of Distraction as before mentioned. It is certain by Req. 2. that in all parts there is a continual *Nisus* or Endeavour of Contraction; if therefore any external Force or Impulse be made against it successively from R. to S. on the Side P, thrusting it towards

Q. it is certain that when the Impulse is against No. 1. the Thread will be distracted there more than in any other Part; that is, the transverse Surfaces of its constituent Parts, will further be divided from one another, and thereby will there be a greater Endeavour of Restitution, or, which is the same, a stronger Contraction in that Part than any where else, which contractile Force, at last over powering the Impulse made against it, will restore the Fibre again to its former Posture in that Part, and such Impulse by Supposition, successively going on from one End of the Thread to the other, all its constituent *Machinulae*, 1, 2. 3. 4. will successively be moved one after another.

But to make this Matter still more plain, let a Portion of an Artery be represented by Fig. 11. through which the Blood is continually propell'd, in a Direction parallel to its Axis; nothing is more certain, than that if it were not for the Resistances of the Sides of the Artery at *E. E.* the Blood setting out at *A. B.* would go on by the pricked Lines to *C. D.* and therefore it cannot but strike against the Sides of the Artery at *E. F.* and distract them there more than in any other Place, whereby their Endeavours of Restitution, will be greater there than any where else, and therefore when the Impulse of the Blood has raised them to a certain Measure, (wherein their Endeavours of Restitution, will exceed the Force of the Impulse that raised or distracted them) their contractile Powers will draw them up again into their former Dimensions, and consequently will the Blood be thrust forward into the next Section of the Artery, and so on successively from one to another through the whole Course of its Circulation: And upon this Mechanical Constructure of the Heart and Arteries is it that the Blood is carried thorough its whole Circuit, the Contraction of one Section of an Artery, being the true Cause of the Bloods Impulse against, and raising the next. And this Alternate Distraction and Contraction of the Vessels, thus naturally resulting from, and depending upon, the peculiar Arraignment and Dispositions of their component Parts, would for ever continue, were the Distractions constantly kept up by the due Impulses of their circulating Fluids, and were all the Requisites of that Mechanism, by which they again contract themselves always to remain the same, but as it is impossible but that the Solids must in time by their continual Attritions wear out, and seeing that all the Requisites necessary for the carrying on such Motions, are liable to be affected and disturb'd, by almost an infinite Number of Cause

Causes ; nothing can give a greater light into the Means by which the animal Machine is to be preserved, than the knowing both how its own necessary Motions naturally tend to wear it out, and how it may be injured or assisted by external Causes ; and this brings me to the last Thing proposed, viz, the Consequences of the continual Motions of the Solids ; and of that peculiar Contexture, here assigned of the constituent Parts of an animal Fibre.

The most natural Consequence of this Motion. will be the breaking still smaller and smaller the component Parts of that Fluid, which by Req. 3. is dispensed to them to lubricate and facilitate their Motions ; which Commination will be continued, until it is rendered so fine, as to fly off at the Surface whenever it happens to get there, and thereby must there continually be made a Wast of it, and meerly by such Attritions of the Parts, as necessarily arise only from their due Discharge of the vital Functions ; and that Matter which thus insensibly flies off, is the true *Materia insensibilis Perspirationis* of *Sanctorius*, the Exhalation of which is so necessary and beneficial : What a Light this sets the whole Doctrine of Perspiration in, may, with what has been said under several *Aphorisms*, very easily appear to any one who is but indifferently acquainted with the animal Oeconomy, without entering into more particular Explanations about it.

But this Wast must needs make it necessary that there be a continual Supply, and this is made from what is taken in by the Stomach ; which after divers Digestions and Alterations, at last is mixed with the Blood, and there fitted for the Seccession of some Parts, through Glands constituted for that Purpose in the Brain, which from thence are dispensed through the whole nervous System in such a Manner, as continually to keep up a due Supply of this animal Fluid. There is another way by which it is very probable that the Fibres take up fresh Supplies, and that a much nearer ; for according to their natural Structures, it is very likely that even in the Stomach and throughout the whole Passage of the Food into the Blood, those Parts of what is taken in, which are soon separated from the Rest, and ready fitted for this Use, may when they chance to strike against any of the Interstices of a Fibre, be laid hold on, and by Degrees conveyed into the Substance of the Thread ; as suppose a Particel fitted for this Purpose, that is to make a part of such a Fluid as this we are speaking of ought to be, should strike against the Interstice of the Fibre R. S. Fig. 10. between No. 1, 2. at the time when it happens to be

be deflected towards *P.* as it is certain that the Interstice at that time is larger than at another, and likewise that those Ends of the Particles No. 1. 2. which are nearest one another must something recede from their former Contacts against those of the next Series; so such a Particle may so far be carried in that when that part of the Fibre again returns towards *Q.* it may be closed up and squeezed forward between the longitudinal Surfaces, until it comes against an Interstice of the next Order, and gets through that in the same Manner. And this Conjecture besides the mechanical Account which may be given of it, is further supported by common Experience, by which it is evident that the Solids are invigorated with fresh Recruits of Spirits, immediately upon taking into the Stomach such Meats and Drinks, as are spirituous, and contain in their Composition, plenty of Particles, very fine, active, and easily to be divided from the Rest, of which kind the Fluid we are speaking of must consist; and thus every one upon eating a good Meal, or upon drinking of any spirituous Liquor, especially if it be after long fasting, or a large Expence by hard Exercise finds himself immediately as soon as it is in his Stomach, raised with new Spirit and Vigour; which could by no means happen, where the Solids to obtain these Recruits altogether from the Blood, as it passes through the Brain, because it is impossible that what a Person finds himself recruited by, should in so short a time have gone through the usual Digestions and Circulations.

But by this it will be thought that I make no Difference between this Fluid and the *animal Spirits*, to which I must confess I do not, or can I possibly come at the least Guess at any other sort of *animal-Spirits* in a human Body besides It. I am not insensible how much has been invented and said hereupon by some cunning metaphysical Heads, who to account for several of the Operations of the *Animal-Machine* have contrived some inconceivable nimble Messengers, to do whatsoever they have a mind to employ them about; but whatsoever Notions have been advanced concerning them, not agreeable to those Laws, by which all material Agents operate, are meerly chymical and delusory. If there are therefore any other Spirits than that *Animal-Oil* or *Juice* which moistens and preserves the Motions and Elasticity of the Fibres, in the manner above-mentioned, and that are not subject to Mechanical Laws, I think it much more belongs to another Order of Men, than to the Physicians to tell us what they are.

And

And when that Elasticity, which the Fibres obtain by the peculiar Contrivance of their component *Machinulae* comes to be well considered : I cannot believe there will be found any want of those imaginary Aids, to account for the animal Operations. Of this Fluid only then, which is in this Manner, and for the Purposes above-mentioned supplied, I would always be understood to speak, whensoever I use the Terms *animal-Spirits* or *Oil*, *Liquidum Nervosum*, *Succus Nervosus*, the *Nervous Fluids* or *Juices*, it being nothing else in the animal Machine, than a convenient Moisture to lubricate and facilitate the Motions of the several Parts, as it is absolutely necessary for the Wheels and Movements of any Machine whatsoever.

And upon this View, with what wonderful Ease may be explained the Contents of the foregoing *Aphorism* ? The Body by Exercise, that is by what is moderate, is made lighter upon a two-fold Account ; both because there is occasioned by it a Subtraction of its *absolute* Weight, as it assists Digestion, and by breaking the Matter to be perspired finer, it promotes the Discharge of that Matter ; and because at the same Time by the quickned Vibrations of the Solids, there is a larger Quantity of fresh Spirits taken up by them from the circulating Blood, both by the Secretion made of them in the Brain, and in the manner just now explained ; whereby they become more invigorated, and so much the more able to carry on a due Discharge of all the vital Offices, and in so much that the Body also will be made relatively lighter, that is will not have the Sense or Perception of so much *absolute* Weight as it had before. The Ligaments and Muscles are cleared of their Excrements by Motion, that is, whatsoever superfluous Particles of the digested *Materia Perspirabilis* may hang about them, is by Motion dislodged and shook off : The Spirits are rendered finer ; that is, such Parts of the nervous Fluid as are just received by the Fibres, are by the Actions of their component *Machinulae* broke smaller, and made fitter for the Services of the Oeconomy.

It would go too far for a Digression, to enter into all the particulars, in which this Theory would afford a great deal of Light : I shall instance therefore but in two or three ; first taking Notice what Disorders this Fluid is most likely to fall into, or how it is most liable to be distempered, which I think is plain, to be one of these two ways, either by becoming too gross and siezy, or too fine and exhalable, The
first

first may be occasioned by a Want of sufficient Agitation and Motion in the Solids, whereby its Parts attract one another, and form viscid Cohesions, in the same manner as it happens in the Blood in the same Case, which renders the Motions of the fibrile *Machinule* very difficult and troublesome, and sometimes so obstructs or plugs up those *Vacuola* between their transverse Surfaces, which are necessary to the Maintenance of their Elasticity, as to prevent in a great Measure at least, their Powers of Restitution, when they are distracted ; as it happens in a *Leucophlegmatia*, *Anasarca* and the like ; where the Springs of the Fibres are so much destroyed, that an Impression upon a Muscle will sometimes remain a great while, before its constituent Threads can recover their natural Dimensions : Another Disorder of this Fluid and which is opposite to the former, is its being broke too fine ; which will make it so exhalable as to fly off in Quantities, greater than the digestive Power in the Stomach, is able to recruit : and this is often brought about by too violent Exercise, too large Evacuations, or drinking too great a Plenty of Spirituous and hot Liquors, whereby the Constitution of the Blood is so far weakned, as not to give a due Resistance to the Contractions of the Vessels which circulate them, whereupon they vibrate quicker, and break the Nervous Juice too fine ; which brings on a Hectick and Death if not timely remedied,

Nothing is more plain than that the first of these Disorders is to be remedied by giving brisker Motions to the Solids, and increasing the Vibrations of the Contractile Vessels, in which how far Exercise will go, cannot be a Secret to any one who is at all acquainted with these Matters ; as likewise what Sorts of Exercise will best agree to the Case in Hand, and most effectually fall in with the Intentions of Cure ; and whether it is to be brought about by Medicine, or external Means, or Both ; for Vomiting as hath before been taken Notice, and every thing which acts as a *Stimulus* comes under this Head, and their Efficacies are chiefly to be determined, by their greater or lesser Power of irritating, shaking, and Contracting the Fibres. By these Means the Fibrile *Machinule* are so forceably moved, as to loosen such Parts of the animal Oil, as are obstructed in their Interstices, and by degrees break them small enough for Expulsion ; and a fresh Stock of such Spirits will be supplied, as will restore to them their natural Springs. The latter Disorder is to be rectified by Medicines and a Diet that agglutinates, and gives a greater or
stronger

stronger Consistence to all the Fluids, and by all such means as check the inordinate Motions of the Solids, in which besides the Cessation from usual Exercises, *Opiates* seem to have the greatest Share, and to be the most efficacious; so that upon the whole it seems, that to keep from either of these Extreams, and preserve the Body in perfect Health, Care is to be taken to maintain a just Ballance, between the Elastick or compressive Force of the Solids, and the Resistances of the circulating Fluids, because if the *Equilibrium* is lost on either Side, the Body cannot but fall into some Distemper; and in this consists the whole Art and Business of a *Rational Mechanical Practice*, to know when to add to, or subtract from the Resistances of the Fluids, and when to check or spur the Motions of the Solids, and also to be well acquainted with the various Methods, by which all these Intentions are to be brought about.

But as the *Gymnastick Practice*, is more particularly established by this Theory, and as this sort of Management of some Diseases, seems much of late to have got into the good Opinion of the World; I cannot forbear just taking Notice how wonderfully the Effects of Musick in some extraordinary Cases are explained hereby; for according to this Contexture of an animal Thread, it is very plain that the least Stroke imaginable upon it, must move its component *Machinulae* in all their Parts; every Wave therefore or Undulation of the Air, which is made by a musical Instrument, gives the Fibres of the whole Body, more or less, according to their Degrees of Tension, correspondent Concussions, whereby all the *Machinulae* are successively moved from one to another throughout the whole Thread; and consequently the Spirits are not only raised and made finer; but the other animal Fluids are also more briskly agitated, and their preternatural Cohesions, and Viscidities destroyed. And this Advantage has Musick above any other Exercise, that those Concussions made upon the Fibres thereby, are short, quick, and easy, whereupon the nervous Fluid is not only more briskly agitated, but also the natural Contextures of all the animal Threads are better preserved by their never being overcharged hereby, as they frequently are with other Exercises, upon this View the extraordinary Effects of Musick in several Distempers ceases to be a Wonder, and it rather comes to be admired, that it is not much more brought into use.

And

And as Musick hath this particular Advantage, that it can never overstrain the Solids, so the Injuries which are frequently received from rough Exercises, in some Constitutions especially, are very manifest, and sometimes never to be repaired; for when a Fibre is distracted so far that some of its component Parts coincide, such a Coincidence will prevent the others drawing up again into their former Postures, and if this State of Distention continues until the *Vacuola* are filled with the nervous Juice, which of necessity will by Degrees be squeezed into them, it is a great Chance if the Fibre be ever repaired, but that it remains useless for ever after; and this is the Reason, why Strains upon some of the Tendons are so troublesome, and sometimes insomuch that they continue weak and painful, if not altogether without the Power of Motion, thorough a Persons whole Life.

This further admirably explains that common Effect of Exercise, in its giving always a greater Firmness and Strength to the Solids; for the more a Fibre is kept in Action, the clearer it will keep its component *Machinule* from the Lodgment and Adhesion of any foreign and superfluous Matter upon them; by which means whensoever it is distracted, there will be the more Room for each Particle to draw up again, and consequently will its Return be with greater Force; but that Exercise which does this, is such only as does not exceed the Powers of the Constitution, for otherwise the Consequences mentioned in the preceeding Paragraph would follow, but when it is within such Bounds as the Capacities and Stretch of the Solids will bear, then for the Reasons already given, will they be rendered more able and ready to obey the Dictates of the Mind, in the performance of their natural Actions: But on the contrary by Rest and Inactivity will every Part loose in its Strength, and the less it is moved be still rendered less able for Motion; and upon this Account it is that we daily see such a mighty Difference between active stirring Persons, and such whose Circumstances of Life, inures them to Labour and Exercise; and those whose Inclinations and Condition, indulges them in Ease and Inactivity; the former are strong, hardy and healthful, but the latter weakly, tender, and diseased.

Only one thing further I'll take Notice of before I close this Digression, and that is with Regard to either sudden Evacuation or Repletion. It is certain that neither of these can be done without Altering the Tension or Distraction of the

Fibres,

Fibres, all over the Body: for upon sudden Evacuation, by what means soever the Matter is drawn off, the Resistances of the Fluids against the Sides of the Vessel, must more or less in proportion to the Quantity subtracted be diminished, and consequently must every Thread which enters into the Composition of those Vessels, draw up or contract itself into a shorter Compass: and if this Evacuation be made in any particular Part, although the containing Part does more immediately draw up, yet in a very little Time will the Fibres of the whole Body be brought into Consent, and acquire a closer Position of their constituent *Machinulae*: as for Instance, suppose the Fibre R S. Fig. 10. be equally distracted in all Parts, by the Impulse of any Fluid equally pressing against it from one End to the other: now, if that Impulse be taken off, by taking away the Pressure of the Fluid against it, only between 1 2 it is very certain that its component Parts will draw up into a close Contact with one another, immediately upon it, but the rest of the Fluid Mass, receding towards the Place, where the Substraction was made, lessens its Pressure against the Fibres quite to the other End, and therefore will all the *Machinulae*, 1 2 3 4. from one End to the other successively draw up; quicker or slower, according as such Recedure is made, and as the Elastick or contractile Force of the Thread is greater or lesser. And thus for the very same Reason, upon any partial Repletion when the Fibres are more distracted by it, in that Part than in any other, will even the remotest in a very short Time be drawn into Consent, and upon this Account, it is that a full Meal gives a Straitness and Weight to the whole Body as well as to the Stomach, as hath often been taken notice by *Sanctorius* in these *Aphorisms*; and also hence may manifestly appear the Reason, why Persons, especially the most robust, upon making a large Quantity of Urine at a Time, feel a certain Shudder all over the Body, which is nothing else than a total Contraction of all the Solids, drawn into Consent with that which is made by the Bladder upon the Expulsion of its Contents. But still the most delightful and useful Application of this Theory might be to Phlebotomy, but the incomparable *Bellini*, hath already done this so well, by determining the Times of Bleeding, the Quantities to be drawn off, and the Consequences of it, that there is no need of enlarging upon it, the Reader may consult his Propositions *de Missione Sanguinis*.

A P H. X.

Exercise promotes both the sensible and insensible Evacuation : but Rest only the insensible.

E X P L A N A T I O N .

It is here also needful to take Notice, as before *Aph. XX. XXI. Sect. I.* of the difference between the matter of insensible Perspiration, and that of the other Evacuations, as also the manner they are both discharged by. That of insensible Perspiration is almost altogether prepared and made so, by the Actions of the constituent *Machinulae* of the Fibres ; which continuing always in their Motions, in Sleep and at Rest, in the Discharge of the necessary vital Functions, that matter is prepared and discharged more regularly at such Times, than when the Body is in Motion, because then the additional Force of the circulating Fluid, will be so great against the excretory Organs, as to carry away and discharge more than sometimes can be spared without Prejudice ; and therefore the sensible Evacuations must needs be encreased by Exercise ; but this also frequently makes it of great Service when there is an over Weight, and need of Discharges.

A P H. XI.

If a Person lies in Bed ten Hours after Supper, he will perspire well ; but if he lies longer, there will begin to be a Decrease both of the sensible and insensible Discharges.

E X P L A N A T I O N .

Continuing longer in Bed than is requisite for due Rest and Perspiration, causes too great a Waste of the nervous Juice, and spoils the Contextures of the Fibres, by keeping them too long in a State of Relaxation ; and therefore afterwards they are less able to perform their respective Offices, and make their proper Discharges.

A P H. XII.

Long Rest renders distempered Bodies more heavy, both because by Motion, the perspirable Matter is prepared for Expulsion ; and because during such Rest, the Meat and Drink, (if they are not what the Person has been accustomed to, but such as sick People are usually treated with,) are not digested, from which arise a great many Inconveniences, and frequently Death.

EXPLANATION

By means of long Rest and Inactivity, the nervous Fluid grows seazy, that instead of assisting, it rather obstructs the Motions of the Fibres ; also by a long State of Relaxation, it cannot but insinuate it self so much between the transverse Surfaces of their component Parts, as to destroy very much their Powers of Restitution ; which Inconveniency is remedied or prevented by that Agitation and Comminution, this Fluid acquires by Exercise. That unaccustomed Meats and Variety of them, with which some People are also usually treated, are prejudicial to Digestion, and consequently to Perspiration, has been already proved *Aph. VII. and LII. of the Third Section.*

A P H. XIII.

Whoever have a Pain in their Feet after lying long in Bed, walking will Cure them : but if the same happens upon travelling, the Remedy is Rest.

EXPLANATION.

The Feet by long Disuse of accustomed Action, suffer in the same Manner as the whole Body by too much Rest, (See *Aph. preceeding*) And for the same Reason. If therefore the obstructed Perspirable Matter, or the Viscidity of the nervous Fluid, or any other ill Quality it contracts for want of proper

Agitation, occasions Pain, the best Remedy must needs be walking, which gives the greatest Exercise to those Parts : And I cannot but think their Way of living, who feed high, and overstock their Nerves with vinous Spirits, and use very little Exercise but riding in a Coach, enters a great Way into the Causes of the Gout, and especially of the Feet being most commonly the Seat of it ; for to this Purpose it is very observable, that such Persons that live mean and labour hard, if they ever happen to be honoured with this Distemper, it more generally fixes about the Hands and Arms.

A P H. XIV.

There are two kinds of Exercise, one is of the Mind, and the other of the Body ; that of the Body discharges the sensible Excrements ; but that of the Mind, rather the insensible, and more especially, those of the Heart and Brain where its Seat is.

EXPLANATION.

To clear this *Aphorism*, as also the three following of all its Obscurity, and fully to explain the whole Contents of it, would take up a great deal of Room. By Exercise of the Mind, in this, I cannot guess what is meant, unless that Power by which the vital Functions, especially those of the Heart and Brain are carried on, which is meerly Mechanical, and depends upon the particular Make and Constructure of those Parts. But in the following *Aphorisms*, it is plain he intends those Faculties and Powers which the Soul hath, and can make use of in changing the usual Procedure of the vital Offices. By the Exercise of the Mind therefore here, is to be understood nothing else than that State of Inactivity, wherein no Change is brought about in the Body, but such as is the necessary Result of the vital Functions ; which has before been proved the principal Cause of the Digestion of the perspirable Matter, and its most regular Discharge by insensible Evacuation : and as the Heart and Brain are chiefly concerned herein, so upon that Account, they may be said more than any other Parts to be cleared of their Excrements, that is, of their superfluous Juices, and not at all because they are a-

ny more the Seat of the Mind than other Parts of the Body. So that in this Sense indeed the insensible Discharges are more promoted than by Exercise ; for the Reason given above under *Aph. X.* of this *Section.*

A P H. XV.

Too much Inactivity of the Mind, checks Perspiration, more than that of the Body.

EXPLANATION.

The manner how the Mind or Thought works upon the Body, is a Mystery, and no Way at least to be brought under a mechanical Way of Reasoning ; because it is not possible to represent and delineate, as we do corporeal Substances, that which never comes under the Notices of our Senses, but in its Effects ; and therefore we cannot have any Notion of the Procedure by which they are brought about, as we can have of all those effected by physical Agents. But as it is certain that the Actions of the Mind, that is, the Thoughts that pass thorough it, especially when sudden and intense, do influence very much and alter the Constitution, so far as necessarily to bring it under the Physician's Care ; the wisest must herein be contented, to establish his Rules upon Observation only, and therefore it is no great Wonder to find even *Sanctorius* hereupon very obscure, and often contradictory to himself as in this *Aphorism*, what is intended by Rest or Inactivity of the Mind, is very hard to conceive, unless it be such a composed indolent State of it, as is not disturbed and ruffled by any violent Passions ; for waking it is impossible it should be free from Action, that is, from having some Thoughts or other pass thorough it. So that if its being raised up into Passion sometimes, is meant that Exercise which is so beneficial and conducive to a good Perspiration, it much more becomes a rational Creature to forego the Benefit, than enjoy the Advantages of it, as the Pleasures of a rational Mind, are preferable to sensual Enjoyments. That such Engagements of the Mind indeed as fill it with Pleasure and Gaiety, may with Respect to the State of Indifference, be called an Exercise of it, is not to be objected, and that such a Disposition may so far assist the natural Vibrations, of the Nerves,

Nerves, as to render their Juices fitter for their proper Offices, is not to be questioned, but then this does not well fall in with the Contents of the following.

A P H. XVI.

Those Exercises of the Mind, which are most conducive to exhale the Spirits, are Anger, sudden Joy, Fear and Sorrow.

EXPLANATION.

Nor does this agree with a great many *Aphorisms* of the *Seventh Section*, and the *First Aphorism* more particularly seems to contradict it.

A P H. XVII.

Even those Persons that are subject to vehement Passions, shall waste more by Perspiration lying in Bed, than such, who enjoy a Serene Mind, by the most violent Exercises of the Body ; as it appears by those who play at *Tennis*.

EXPLANATION.

Nothing is more observable than that violent Motions of the Mind, waste the Spirits, and bring great Disorders upon the Constitution ; and this they seem to do as *Stimuli*, universally irritating and twitching the Nerves, in such a Manner as disturbs their regular Contractions ; but how they should occasion such large Discharges of the perspirable Matter, as violent Exercise, I cannot conceive.

A P H. XVIII.

By too much Exercise, the Excrements of the first and second Concoctions are for the greatest Part distributed thorough the whole Habit of the Body ;

Body ; by which the Belly becomes costive ; but the Body is rendered lighter, because the insensible Evacuation is much greater, than the Quantity of Excrement expelled by Stool.

EXPLANATION.

As it already abundantly appears that Exercise very much assists Digestion, so if it be too great but especially if it be too long continued, it will so much enlarge the cuticular Passages, by carrying off a greater Quantity than usual those Ways, that all the other Evacuations, will in proportion to such Encrease be lessened, and amongst the Rest that by Stool. And therefore notwithstanding the Body by this means grows costive, yet as the cuticular Discharge is much the largest, the Encrease of that will so far exceed the Diminution of the other, as to render the Body lighter thereby.

A P H. XIX.

Violent Exercise both of the Mind and Body, renders Persons lighter but it hastens on old Age, and threatens untimely Death ; for according to the Philosopher, those who are exercised, dye sooner than those who are not.

EXPLANATION.

Exercise beyond the natural Strength of the Constitution, cannot but by Degrees wear away the Solids, and destroy that peculiar Contexture of the *Animal Threads*, by which they are maintained in their Motions, and the due Discharge of their several Functions ; and consequently it must needs bring on old Age or immediate Death.

A P H. XX.

Violent Exercise, discharges from the Body overloaded with Meat, or crude Juices, less than

usual of the sensible Excrements; and hardly any thing at all insensibly.

EXPLANATION.

In such Cases therefore, Abstinence, Diluting with very small Liquors, and gentle Motion, are best, because Exercise that is violent, will then so much overstrain the Fibres, as to destroy very much their Powers of Contraction, and thereby so much hinder Digestion, as to lessen both the sensible and insensible Discharges.

A P H. XXI.

By Exercise the Body perspires the less, but the more by Sleep, and the Belly is rendered thereby more loose.

EXPLANATION.

This is true only of immoderate Exercise, for gentle Motion much assists Digestion and Perspiration, as fully appears by *App. IX.* of this *Section*, and that the Belly is loosned by the Perspiration which is performed during Sleep, is no otherwise, than as all the Solids are thereby supplied with a convenient Share of Moisture, and are thereby fitted the better for their several Offices.

A P H. XXII.

Frictions and Cupping, in Bodies full of Crudities, hinder Perspiration.

EXPLANATION.

It may be laid down for a certain Rule, that any Sort of Exercise, and every Attempt which is made by moving the Solids, to break the Viscidity of the Fluids, and thereby make any Discharges, if it does not effectually succeed, the Obstruction will be made much the greater, and the Body brought

brought into a Worse Condition than before because where such means do not answer, the Fibres will by them be strained, and less able afterwards to make the like Attempt, such means ought therefore to be entered upon with the utmost Caution and Prudence. And whereas Frictions and Cupping, are frequently of wonderful Service, yet their answering their Intentions by giving a Spur to the Solids, and promoting the Contractions of the Fibres, if the Overcharge designed to be moved by them, does not give Way, the Fibres will be hurt in their Springs, and thereby afterwards not so able to contract as before; and consequently there will be less digested and perspired, and the Obstructions rendered more obstinate.

A P H. XXIII.

Exercise is then most wholesome, when the Body after the first and second Concoction, is reduced twice a Day before Eating to its wonted Standard.

EXPLANATION.

This is without Doubt a very good Rule, but without the Ballance cannot exactly be known, and therefore must be judged of by the *Relative Weight*, that is the perception a Person has at such times of his own Weight, which if attended to with Care, is sufficient to prevent any one falling into Extremes on either Hand.

A P H. XXIV.

Swimming soon after violent Exercise is bad: because it very much obstructs Perspiration.

EXPLANATION.

This is exactly the same as *Aph. XIV. Sect. II.*

A P H. XXV.

Violent Exercise where the Wind blows, is bad.

A P H. XXVI.

From the Wind comes an Obstruction of the perspirable Matter ; and from Motion its Acrimony.

EXPLANATION.

See *Aph.* XVI. XXI. Sect. II.

A P H. XXVII.

Riding seems rather to promote the Perspiration of the Parts above the Loins, than below them, but amongst the Riding Paces, the Amble is the most wholesome, as the Trot is the least so.

EXPLANATION.

The Advantages arising from Riding, has been of late so much talkt of, as to bring this Exercise into good Esteem, and undoubtedly with a great Deal of Reason : But its most fond Admirer seems to be *Baglivi*, to whose *Specimen de Fibrâ Motrice*, the Reader may turn for further Satisfaction. Mr. Fuller also has laid much hereupon in his *Medicina Gymnastica*, and has carried his Reasonings so far, that were his Hints attended to and practised, it would be no uncommon Thing to meet a Man upon the Road, riding full Speed from the Gout or a Rheumatism : For he must certainly be in the Right, that during such violent Motion, the Pain of those Distempers will not be perceivable ; but the Reason I fear is not from any Removal of the Cause, but a Suspension of the Means by which it is communicated from its Seat to the Brain, or common *Sensorium*, for that Reflux of the nervous Fluid towards the Brain, from the part affected, is during the

The Violence of another Motion prevented, and therefore nothing is felt of that part ; but as the Cause it self is not removed, when that Motion ceases, the *Succus Nervosus* from the wonted Irritation of the Fibres will be modified, as before ; so that as soon as such a Person slack his Pace, the Distemper will overtake him. That there is a great Difference as to the Paces is very certain, one being more agreeable and advantageous to some Cases and Constitutions than the other which a judicious Person will seldom fail to foresee ; but that Ambling is most wholesome, and Trotting the worst I cannot conceive. Indeed the former does not give such strong Concussions to the Fibres as the latter, and therefore may be more proper for weak People, and where the Motion is not required to be great, but the latter for the same Reason, is by all Means to be preferred, where the Body wants to be shook more forceably, and is able to bear it. And in Obstructions of the *Viscera* especially, this Exercise cannot but be of great Advantage, because as *Sanctorius* rightly observes, it more particularly affects and shakes the Head and Trunk of the Body.

A P H. XXVIII.

Carriage in a *Litter* or a *Boat*, does not so well promote Perspiration as walking.

A P H. XXIX.

The Motion of a *Litter* or a *Boat*, if it continues long, it is most healthful ; and then only because it wonderfully promotes due Perspiration.

EXPLANATION.

That Carriage in this Manner is not so serviceable as Walking is no Wonder, because Walking gives a considerable Exercise to most of the Muscles of the Body, and therefore it helps Digestion, and prepares the perspirable Matter for Expulsion, but this is not any further to be looked upon as an Exercise, than as by it there is a Change of Place, for even all that Time the Body is as much at Rest as in Bed, and

and it gives no manner of Exercise to the Muscles ; how therefore it should be so advantageous by its long Continuance, I cannot imagine.

A P H. XXX.

To be carried in a Chariot is of all the most violent ; for it not only forces out the indigested perspirable Matter, but it is also very injurious to the Solids of the whole Body, more especially the Kidneys.

EXPLANATION.

The Motion which Riding in a Chariot gives a Body, in rough Ways and upon Stones, as it is very considerable, and chiefly in short strong Shocks, so the *Viscera* by their continued Repetitions, are frequently overstrained, and have some of their principal Fibres so damaged in their natural Contextures, as not afterwards to be able to discharge their respective Functions ; and the Reins more especially by such Shocks, as their Office is to secern the most heavy saline Parts from the Blood, and gradually let it down by the *Ureters* into the Bladder, cannot but be frequently in a great deal of Danger of having their Contents thrown down faster, than they ought to be, and the Capacities of the Passages designed for that Purpose will admit of ; whereupon those Passages become obstructed, and that too with such a Matter, as by its Weight and multiplicity of Angles, cannot but very much press upon, and wound the Membranes, and thereby occasion very sharp Pains.

A P H. XXXI.

Leaping at first contracts the Strength inwards, then strongly forces it outwards, insomuch that it expels with Violence, the indigested Matter, with that which is digested.

EXPLANATION.

That Leaping is an Exercise which puts the Body upon so much Violence, as to be attended with the Consequences herein mentioned, will hardly be questioned, but what to make of contracting the Strength inwards, and then propelling it into the extream Parts I cannot tell.

A P H. XXXII.

The Exercise of the *Top*, as it is compounded of that which is moderate and violent, *viz*; of walking and moving the Arms, it is very conducive to Perspiration.

EXPLANATION.

This is an excellent Exercise, and may be used without any manner of Inconvenience, if Care be taken not to use one Arm much more than the other, which most are apt to do, by being readier with one Hand than the other, because so doing is apt to occasion a partial Distribution of the animal Juices, whereby one Side gets more Nourishment and Strength than the other, and the Body grows out of its proper Shape, as it happens hereby to a great many young People. The Motion of the Arms by this, so much Exercises the Muscles of the *Thorax*, and helps to enlarge and preserve the Capacity of the Breast, that it is very assisting to the proper Office of the Lungs, as well as Perspiration.

A P H. XXXIII.

Moderate Dancing, without Jumping, comes the nearest of any Thing to the Advantages of Walking: for it leisurely expels the digested perspirable Matter.

EXPLA-

EXPLANATION.

This may perhaps help to reconcile some scrupulous Persons to this Exercise, for there may a real Service, and that a very considerable one, be obtained from it.

APHORISMS

Added by the AUTHOR.

A P H. XXXIV.

When Perspiration falls short of its proper Quantity in sound Persons, it is to be remedied by Exercise.

EXPLANATION.

This is very true, and is abundantly manifest from a great many of the foregoing, and therefore fully justifies the Restriction made of *Aph. XXI.* of this *Section*, in its *Explanation*.

A P H. XXXV.

By too much Exercise the Fibres become hard; whence Old-Age, which is a universal Hardness of the Fibres; this by condensing the Pores, suffocates the vital Heat: but moisture by keeping them open procures long Life.

EXPLANATION.

Too much Exercise will break the nervous Fluid, so much as to occasion a greater Waste of it than can be supplied, and

and therefore the component *Machinulae* of the Fibres, for want of this animal Oil, will loose their Power of Motion and stand still, which is Death ; and the nearer a Person is brought by any means whatsoever to this State, the further may such a Person be said to be advanced towards old Age. But for condensing the Pores, and suffocating thereby the *vital Heat*, is a Difficulty I cannot get over : although for Moistures opening them, and procuring long Life, may without Difficulty be understood, in the Sence before laid down concerning an animal Fibre ; and then it is no more than saying, the Wheels of the Machine will continue their Motion, so long as they are supplied with the Requisites thereunto.

A P H. XXXVI.

He who would preserve a youthful Countenance, ought to take Care not to Sweat ; or that he does not perspire too much with Heat.

EXPLANATION.

Because Sweating and promoting the cuticular Discharges beyond due measure, supplies the Skin with too great a Quantity of Moisture, and makes it the sooner loose its beautiful Smoothness and run into Wrinkles, as it is very observable in the Hands upon dabling in any Liquor for a considerable time together.

Medi-

Medicina Statica.

S E C T. VI.

Of V E N E R Y.

A P H O R I S M I.

TOO great an Abstinence from Venery, and an immoderate Use of it, obstructs Perspiration, but an immoderate Use of it does it most.

EXPLANATION.

The Action of Coition, as Dr. Lister observes in his Note hereupon, is of the Nature of a Convulsion, at that Time therefore the Fibres cannot but be insensibly drawn up, whereby the cutaneous Pores will necessarily be straitned, and the Expulsion of the perspirable Matter of Consequence hindered: too frequent a Use then of this Exercise, cannot but be very prejudicial, by retaining what ought to be discharged, and rendring the Body heavier; as well as by overstraining and destroying the Force of the Fibres, (as hereafter will be proved.) Long Forbearance of it also, especially whilst there are considerable Irritations thereunto, may have the same Effect, both as the Part irritated will by Degrees draw also the Fibres of the whole Body into Consent, that is into too great a State of Contraction; and as the Mind will likewise thereby be so employed, as not to admit of those frequent Relaxations as are necessary to pro-

more the natural Discharges. How too great Exercise of the Mind does this, will be explained in the following Section,

A P H. II.

Upon immoderate Coition, about a Fourth Part of the Quantity usually perspired, in a great many will be obstructed.

A P H. III.

The Mischiefs arising from immoderate Coition, are *mediately* from an obstructed Perspiration, but *immediately* they arise from the Injuries done to the concoctive Faculties.

EXPLANATION.

As immoderate Coition may hinder Perspiration by keeping the Fibres too strait, and lessening the Passages; and thereby *mediately* give Rise to all those Disorders which are wont to follow an obstructed Perspiration; yet the greatest Injuries received thereby, are *immediately* from the Hurt which is done to the Force and Elasticity of the Fibres. For it hath already been proved at large, that a right Discharge of all the animal Functions depends upon a due Tension and Springyness of the Solids; whatsoever therefore disorders and weakens this Disposition of the Solids, cannot but very much prejudice the whole Constitution; and that any violent Actions, (as that of Coition may perhaps be the most violent they are capable of,) are destructive of the Textures of the Solids, cannot be doubted, by any one who considers what hath been said under *Aph. IX. Sect. V.* of an animal Fibre. For not only the component *Machinulae* of these Threads, will be much injured in their Contextures, but also that animal Oil or Spirit which is bestowed upon them to facilitate their Motions, will be so much squeezed out, and wore away, as very much to disable them afterwards in their natural Motions; that is, according to the usual Way of speaking, an immoderate Use of this Exercise, will so weaken and dispirit the Body, that the several Parts afterwards, will not be able but imperfectly to discharge their respective

Offices ; whereby Digestion, Concoction, and all the natural Evacuations will be disordered.

A P H. VI.

It may be known that Coition proves beneficial, if after the following Sleep no Weariness is perceived, and no Alteration is found in the Body, with respect to its Weight.

E X P L A N A T I O N.

This is plain from the Reasons given under the foregoing, for if such as have been proved the Consequences of its immoderate Use, do not ensue, but that on the contrary every thing is well and in its natural State ; nothing can be more certain, than that it hath not been used beyond what the Strength of the Constitution will admit of without Injury ; and that, if after the following Sleep, the Body is brisk and lightsome, is a good Sign that by such Exercise, just so much only was thrown off, as was convenient and necessary to be parted with, and that in the Room of what was so discharged during the Time of Sleep, there is a fresh Recruit of that which is much better and fitter for the Purposes of the Oeconomy.

A P H. V.

The continual Thoughts of venereous Persons, renders their Bodies sometimes heavier and sometimes lighter, heavier with a full, but lighter with an empty Stomach.

E X P L A N A T I O N.

Earnest Thoughts upon a full Stomach is very likely to retard Digestion, by disordering and interrupting the natural Tensions and Vibrations of the Fibres ; and as it straitens the Fibres in general, so when it happens upon a full Meal, it rather closes and shuts up the Juices in their Passages, than
promotes

promotes and helps forward their Motions, and therefore does what was then taken in remain longer in the Body and render it heavier; but when this is upon an empty Stomach and the Vessels are empty, in Comparison to what they are upon a full Meal, such a Contraction of the Solids will occasion their breaking, and making a greater Wast of the Juices, than a more relaxed State would do, and thereby therefore, must the Body be rendered lighter.

A P H. VI.

After immoderate Coition with a Woman, whom a Person hath been very desirous before to enjoy, there will no Weariness presently be felt; Because the Pleasure at such a time assists the Perspiration of the Heart, and gives it Vigour; from whence it happens that what is wasted by such a one is the sooner recruited.

EXPLANATION.

Upon this I must leave the Reader to make his own Comment; although indeed the Reason here given for the Non perception of the ill Consequences which follow such Embraces, holds good with Regard to the Distinction before made, between the *absolute* and *relative Weight* of a Person; for that Satisfaction and Extasy which such Enjoyment may give, will, while it remains, be as a fresh Infusion of Spirit and Strength, and thereby prevent any Sense of Weariness; but as soon as that wears off, it is very likely a Person will feel the same, if not worse Effects of his Raptures, than is common to a more indifferent Lover. How the Pleasure assists the Perspiration of the Heart, or strengthens it any further than by suspending a Sense of Weariness, I cannot understand, or why at such times a more speedy Recruit should be made than at any others.

A P H. VII.

They who are very eager after Venery, if they check their Inclinations, a Lightsomness of the Body will immediately follow, because they perspire so much the better.

EXPLANATION.

If the Mind can be taken off from such Inclinations without Uneasiness, it is very likely to have this Effect; because that which is very conducive to excite those strong Desires, viz. a warm vigorous Constitution, hardly ever fails to raise a great Deal by Perspiration.

A P H. VIII.

Immoderate Coition will expel that which is undigested by Perspiration, and afterwards render the Flesh colder.

EXPLANATION.

In the same Manner as any violent Exercise, by the strong Contractions and Succussions of the Fibres, the perspirable Matter will be thrust forward and expelled faster than it can be digested, and thereby also the nervous Fluid will be so much broke and wasted, that the Fibres will decay in their Strength, and consequently afterwards the Motions of the Fluids be retarded, and thence a Decay of Heat.

A P H. XI.

These following are Indications that Coition hath not been hurtful; Urine equally digested as before, a Lightsomness of the Body, an easier Perspiration, and the same *Standard* of Weight remain-

remaining ; so that a Diet be observed the same both in Quantity and Qualities as before.

EXPLANATION.

This is but the same as the IV. *Aph.* above, only more particularly expressed.

A P H. X.

The immediate Injury of immoderate Coition, is a Refrigeration of the Stomach ; but afterwards an obstructed Perspiration ; from whence easily arise Palpitations in the Eye-brows and Joints, and then in the more noble Parts.

EXPLANATION.

I cannot conceive how it cools the Stomach more than any other Part, which it does by weakning the Contractions of the Vessels and the Motions of their Fluids, as hath before been taken Notice. A Diminution of Perspiration, *Sanctorius* plainly seems to think, is its Consequence, not as it straitens the cuticular Passages, so much as by its weakning the Force of the Solids, whereby they become unable to perform their Functions aright, and sufficiently digest the Fluids for their Discharges, and that it hath this Effect, is further most certain by the *Tremors* of the nervous Parts, and that general Imbecility it gives to the whole Body.

A P H. XI.

Coition in Summer-time is most hurtful, not because the Body then perspires more, but because as Concoction is then weaker, what is wasted is more difficultly recruited.

EXPLANATION.

The Reason is very plain, and abundantly confirmed from a great many of the foregoing.

A P H. XII.

In the Act of Venery a great deal of Crudity is thrown off by Perspiration, and if it be long protracted, those Crudities which are at the Centre, will be thrown upon the Circumference and there occasion Obstructions, and render the Belly costive.

EXPLANATION.

All this is plain from what has before been said about Exercise. and brought about in the same Manner, by too strong and frequent Contractions of the Solids.

A P H. XIII.

The more a Person burns with a Desire of Coition, by so much the less will its immoderate Use prove injurious.

EXPLANATION.

Because such a Desire is a Sign of that Vigour in the Constitution, which is able to go through a great deal of Exercise without Danger.

A P H. XIV.

The Injuries arising from immoderate Exercise, are chiefly felt after the next Sleep, for then by the *Ballance* it will be found, that Perspiration hath been obstructed, and that the Meat hath been ill digested, as also that the Stomach hath been much hurt.

EXPLA-

EXPLANATION.

The Injuries receiv'd, are most likely to be discovered after the first Sleep, because during that Relaxation, those Parts principally concerned in the vital Offices, have it most upon them to discharge their Duties; what Damage therefore or Strains they have before received in Coition, will occasion some Defect in that Discharge, which upon waking will soon be found out. Weakning the Stomach, and lessning Perspiration are Consequences of one another, whatsoever therefore does the first, will also do the other; for what Passes not sufficiently digested out of the *primæ viæ* into the Blood, will obstruct the capillary Vessels, and prevent a due Discharge by the Skin.

A P H. XV.

Coition is wont to hurt the first Concoction, first by checking the Expulsion of the perspirable Matter which is in readiness to go off, and thereby converting the Food into Crudity.

EXPLANATION.

The first is done by drawing the Fibres too strait, and the latter, by weakning the Force of the Stomach, as explained under *Aph. X.* above.

A P H. XVI.

He who in Coition forbears the Emission of Semen, is by it the less weakned; nay if he repeats the same Exercise the Day following, and then ejects what was the former Day prepared, will not be so much debilitated.

EXPLANATION.

This is best known to those who have Command enough of themselves to try the Experiment, which I believe are very few, unless such as are pretty well advanced in Years, or

those who have been drained by too frequent Use of this Exercise.

A P H. XVII.

He who in Coition on purpose forbears Emission, will be apt to have a swelling in his Testicles, because the *Semen* is imperspirable.

EXPLANATION.

By this therefore it appears that this Experiment, (if any have Patience to try it,) is not without being attended with considerable Hazard ; and it is very well known by those whose Business leads them to be conversant with Persons lasciviously inclined, that frequent Irritations without Emission, have been attended with Consequences very near as dangerous and troublesome, as where by Coition a Venereal Infection hath actually been contracted. As for Dr. Lister's Reason, that the greater Danger arises from the Obstruction of an animated Fluid, as the *Semen Masculinum* is taken to be, the *Animalcula* therein dying, and thereby turning into Putrefaction ; I cannot see any thing in it, for there are none of the animal Juices, which will not by Stagnation, in what Manner soever they are said to be *animated*, run into new Cohesions, and be changed very much from that State which before they appeared under. The *Semen* also is imperspirable, only as it is a thick tenacious Fluid ; and as there is not a sufficient Compression and Attrition of those Parts where it stagnates, to break it small enough, to pass it off through the Substance of its containing Vessels.

A P H. XVIII.

Immoderate Coition, next to the Stomach, is most hurtful to the Eyes.

EXPLANATION.

As the Fibres of the whole Body are hereby overstrained, so those Parts which are most nervous cannot but be most injured; and as the Composition of the Stomach every one knows wholly to consist of them, and that Vision depends upon a due Contexture, and Supply of Spirits to the optick Nerves, nothing can be more plain, than that every thing which overstrains the Nerves must more particularly be prejudicial to these Parts.

A P H. XIX.

Immoderate Coition hurts the Sight, because it draws from the Eyes a great Quantity of Spirits; from whence it comes that their Tunicles grow hard and rough, and also that their Passages are rendered less pervious.

A P H. XX.

From a Diminution of Perspiration, the Fibres composing the Tunicles of the Eyes, become more opaque; by which Sight is contracted into narrower Passages, as through a Lattice: Spectacles throw the Objects into a Point, that they may distinctly be seen through one Passage only.

EXPLANATION.

The Meaning of the latter I confess is very difficult to conceive. But that Coition or any thing which puts a violent Strain upon the optick Nerves, may defraud them of their Spirits is very plain, as by such strong Contractions, their natural Moistures are pressed out, upon which they must needs grow hard and crispy, and thereby not so fit to be moved by external Objects, and convey those Impressions to the common *Sensorium*, as are necessary to excite the Ideas of Colours and Figures.

A P H. XXI.

By immoderate Coition the natural Heat is diminished ; and from a Diminution of natural Heat Perspiration is lessened ; and from a Diminution of Perspiration arise Flatulencies and Palpitations.

EXPLANATION.

This is a good Summary of the whole Doctrine of Perspiration, and very well agrees with that Theory, upon which the preceding have been explained. Immoderate Coition here may be taken in common with any violent Exercise, or whatsoever destroys the Contextures and Springiness of the Fibres ; and these things have already frequently been proved to lessen the *vital* or *natural Heat*, by diminishing the Velocities of the Fluids ; and that by a Diminution of the Velocities, they grow thicker or more viscid, in proportion to which is always the Quantity discharged by insensible Transpiration ; and also that the more, *That* by the Surface is obstructed, the more plentifully will it be collected within, which must occasion Flatulencies and Distentions of its containing Parts. Palpitations arise from the weakness of the Fibres, because they are thereby so much injured in their Contextures, as to prevent a Regular Flux and Re-flux of the nervous Fluid, whereby the Regularity of their Tonick Motions is destroyed, insomuch that sometimes they stand still, and at others twitch and leap in a convulsive Manner.

A P H. XXII.

Immoderate Coition requires but a slender Diet, and that of a good Nourishment.

EXPLANATION:

Because it so much debilitates the Constitution, as to disable it from dispensing with a plentiful way of Living, of such Meats especially as are hard of Digestion. Such a Diet therefore

fore is most suitable for Persons too much given to this Exercise, as will easily digest in the Stomach, and pass into the Blood in a sufficient Plenty, to recruit the continual Waste that is made thereby; which Waste as it consists of the finer and most spirituous parts of the animal Juices, so ought the Body also to be constantly supplied with such Meats and Drink, as afford the greatest Quantities of the same Nature, and that can soonest be converted into them.

A P H. XXIII.

Coition heats the Liver and Kidneys, because the Heat which it raises does not exhale; but it cools the Stomach, the Brain and the Heart, because the Heat has more open Passages entirely to go off by; and the natural Heat is thereby in a great Measure resolved.

A P H. XXIV.

From hence by immoderate Coition arises Cholera in the Liver, Gravel in the Kidneys, Crudities in the Stomach, a Catarrh from the Brain, and in the Heart Palpitation and Faintness.

EXPLANATION.

This, as any violent Exercise, affects the several Parts of the Body, according as by their Contextures and Offices they are disposed thereunto. Thus the same thing which strains by its violent Motions the most nervous Parts, and renders them weaker thereby; cannot but also more briskly agitate the Blood, and occasion a greater Heat than before in those Parts where it is most plentifully collected; and thus at the same time that the Liver, (where is the greatest Collection of Blood for its Bulk of any part in the Body) is Heat, the Stomack is weakned; by which I can understand no more when *Sanctorius* says it is cooled; and thus of the other parts as they are naturally by their peculiar Makes disposed to be affected. The Heat having more open Passages

ges in one part to fly away, than another ; and the Resolution of it in the Stomach, any more than in the Liver ; are Expressions that betray but a very imperfect Notion in Anatomy, which was but very lame before *Harvey's* Discovery of the Circulation.

A P H. XXV.

If those Eatables which a Man takes in after immoderate Coition, beget Flatulencies, as Oysters and new Wine, they are hurtful ; because they prevent the Body's coming to its natural *Standard* afterwards.

EXPLANATION.

It is a sure Sign that those things which collect such Vapours inwardly, do not go off in a due Quantity by the Skin, they are not good therefore at any Time, but especially when the Solids, and consequently the digestive Faculties, are weakned by any violent Motions : Whether what is here mentioned, or any other thing is apt to offend this Way, every one may best judge by his own Experience.

A P H. XXVI.

Lean Persons are most injured by Coition, because it more heats and cools such than others.

EXPLANATION.

This will not appear to be any Contradiction, when it is considered that the more a Person is immediately heat by any Exercise, the more will he be cooled afterwards, but whether it hath this Effect more upon lean than fat Persons, I am not able to determine ; for I believe these Consequences are rather governed by the Intenseness of the Actions at that time, than the Bulk of the Person.

A P H. XXVII.

Immoderate Coition immeadiately renders the Body lighter, although in the End it diminishes Perspiration ; for it vehemently exercises both the Body and Mind ; the Body, by a Concussion of all the Limbs ; the Mind, because it loosens that which is the Bond of Union between Body and Mind, *to wit*, the vital Spirits.

EXPLANATION.

The latter Part, although it is no uncommon Way of talking, lays me under insuperable Difficulties. The former Part is plain, for during the Exercise, the Fluids are more agitated and broke, and a larger Quantity expelled by Perspiration, upon which the Body is for the present lighter, but as the same Action also weakens the Solids, Digestion afterwards cannot so well be carried on as before, and therefore the perspirable Matter will not be so plentifully discharged, and consequently must the Body grow heavier.

A P H. XXVIII.

If after Coition Sleep is uneasy, it is a Sign that in the Act of Coition, there was a greater Wast made of the vital Spirits, than by Sleep is again recruited.

EXPLANATION.

Such a Wast and defect of Spirits in the Solids, may so much affect them in their Textures, as to prevent that easy Relaxation which is absolutely necessary to sound Sleep.

A P H. XXIX.

After too much Coition, Sleep attracts the Crudities to the Heart: from whence arise *Languors*, an obstructed Perspiration, and an Encrease of Weight.

E X P L A N A T I O N.

This is much the same as the XXI. above, only more obscurely expressed.

A P H. XXX.

Old Men by immoderate Coition grow colder and heavier; but young Men lighter and warmer.

E X P L A N A T I O N.

In Old Men the Strength of the Solids is so much lost, and that Animal Oil necessary for their Invigoration but so sparingly supplied, through the Weakness of the digestive Faculty, that the Wast which is made by Coition, is not to be repaired without a great deal of Difficulty; the Circulations of the Fluids are therefore the slower carried on, and thereupon there must be a Decay both of the natural Heat, and an Encrease of the Bulk or Weight, for want of due Digestion and Perspiration. But this Exercise in young Men, who are apt to err on the Side of having an Overcharge of Juices, hath no other Consequence than any other Exercise would have, which is the breaking the Juices finer, especially the nervous Fluid, whereby the Solids will be rendered more Springy, and will perform their Vibrations stronger and quicker, upon which the Vital Heat must encrease, in proportion to the Encrease of the Velocities of the Fluids, and also must there a much greater Quantity be broke small enough to go off by Perspiration.

A P H. XXXI.

Coition in Young Men strengthens the animal, vital and natural Faculties ; it draws forth and raises the animal by Motion, the natural by an Evacuation of Superfluity, and the vital by Pleasure.

EXPLANATION.

Coition, so that it be not to excess, is very likely in young Persons to encrease the natural Heat, and raise the Spirits, because like any other agreeable Exercise it shakes the Muscles, and breaks and dislodges any superfluous Matter that hangs upon the Fibres, sufficiently to exhale it insensibly ; by which Means the Spring of the Solids is better maintained, and consequently is the Blood circulated and digested, and thereby a more plentiful Stock of Spirits continually separated, and dispensed to all the Parts of the Body. But on the contrary were this Exercise used to excess, would the nervous Fluid be so much wasted, that the Solids would decay in their Springynets, and therefore also must follow a loss of Strength and Spirits. By corroborating the *Animal, Vital and Natural Heat* then is no more than that the Body becomes brisker and stronger ; for the Distinction itself of the Heat of a living Body into *Animal, Vital, and Natural* is of no further Use than I know of, than to make a thing plain in it self, full of Mystery and Obscurity, and to darken Truth with a Multiplicity of unintelligible Terms ; which Unhappiness even our Author is frequently apt to fall into, whentoever he leaves Experiment and Matter of Fact, and endeavours to accomodate his Expressions to the School-Systems ; otherwise he could not talk of driving out *Animal Heat* by Motion, raising the *Natural Heat* by the Evacuation of Superfluities, and the *Vital Heat* by Pleasure. For what the *Natural Heat* of the Body is, and how produced see Explanation to *Aph. LXVIII. Sect. I.* where it is proved to arise from the Motion and Attrition of the animal Fluids, concerning which also Dr. *Picairne* demonstrates these two Propositions.

I. That

I. *That at the same Distances from the Heart, the Heat of the Blood is as its Velocity.*

II. *That the Heat of equal Quantities of Blood moving with equal Velocities is as their Distances from the Heart.*

The Heat of the Body may indeed be encreased by Pleasure, but then it is because such Pleasure gives that Tension and Smartness to the Vibrations of the Solids, as any Exercise does, and therefore by the same Means does it encrease the Velocities and Warmth of the Fluids.

A P H. XXXII.

For a Person to eat more plentifully than usual, upon immoderate Coition would be destructive, if a Corruption of it does not follow.

EXPLANATION.

The Solids cannot but be so much weakned and relaxed after immoderate Coition, (as indeed would it be the same after any other violent Exercise) as not to be able to contract and carry on the Fluids with such Force in their circulatory Motions, as is necessary to prevent their falling into Fermentation and Putrefaction. If therefore at such Times a Person Eats plentifully, he thereby still adds a further Weight to the Solids ; and therefore if what is taken in does not corrupt in the *primæ viæ* and run off by a *Diarrhæa* there is a great Hazzard of a putrid or Malignant-Feaver, by its getting into the Blood and corrupting there.

A P H. XXXIII.

Before Coition a Person should eat little or nothing ; and before Eating he should not use Coition to excess, but rather quite forbear it.

EXPLANATION.

Because Coition violently contracts and draws up the Fibres, so that if such a Weight be laid upon them as a full Meal occasions, there cannot but be a great Danger of their being overstrained, and injured in their Springs. Coition also by the same Reason ought not to be used just before Eating, because after such a State of Contraction is over, they naturally for some Time fall into the other Extream, that of Relaxation, and therefore will they then be unfit for such strong Contractions as are necessary to promote a good Digestion.

A P H. XXXIV.

When there is no Uneasiness felt after immoderate Coition, it is a very ill Sign, as with *Manaicks* the Case is the same, when the Spirits are inflamed, for they strengthen the Nerves and Tendons for a short time by their Dryness, but soon after, a Supply of fresh Spirits is cut off, and the Strength immediately thereupon decays.

EXPLANATION.

If after such immoderate Coition there is no weariness felt, it is owing to the preternatural Contraction of the Fibres, which by being drawn up in the Act of Coition with so much Force, and continuing in that State too long, will not easily recede, and fall into such a Relaxation, as is necessary to their Admission of a fresh Supply of Spirits; the most natural Consequence of which must needs be such a Dryness and Crispiness of the Fibres, as is inconsistent with a right Discharge of their respective Offices, and therefore the Consequence of such Excess must needs be very bad. With *Manaicks* the Case is so far the same, that the Solids are under a violent State of Contraction, insomuch as to hinder those due Reflexes of the nervous Fluid, as are necessary to the Business of Sensation, and to communicate to or make such Impressions upon the Mind, as is usual from external
S
Objects.

Objects. And this State of Contraction while it continues, gives an unusual Strength to all the Solids, not as *Sanctorius* says, properly by drying them, but by encreasing the Contacts of their constituent *Machinulae*, as above explained in the Digression, concerning the *Elasticity of an animal Fibre*, by which they are with more Difficulty distracted, and when so, draw up again with the greater Force. But as this State of Contraction prevents the Derivation of a fresh Supply of Spirits, and it cannot be long before the present Stock will be broke and wore away, they cannot but in a little Time loose that Order and Disposition of their component Parts, which is necessary to continue their Motions, and fall into a total Incapacity of Contracting any longer.

A P H O R I S M S

Added by the **AUTHOR.**

A P H. XXXIV.

Coition upon natural Provocation, is good; upon the Incitations of the Mind, it is injurious to the Memory and its other Faculties.

EXPLANATION.

By Nature or natural Provocation is to be understood, when there is such a Repletion of the Seminal Vessels as distends them, and by its Irritation solicits for Ejection, in which Discharge there can be no ill Consequence, for a Person is rather thereby rendered more lightsome and chearful. But when there is not such a Supply for Ejection, and the Mind by its Pursuit of such Thoughts, occasions such a Derivation of the Spirits or nervous Fluid into those Organs, as irritate them to Coition, it cannot but strain the Solids, and occasion such a Wast of Spirits, as is inconsistent with

that ready Obedience to the Dictates of the Mind, which is necessary for a due Exertion of its Faculties.

A P H. XXXVI.

The Weight of the Body in weak Persons is encreased by Coition ; because such perspire for it the less.

EXPLANATION.

Because it is too hard an Exercise for such Constitutions ; for where the Solids are very weak and infirm, almost the least Motion more than usual will overreach and discompose them, when therefore such Persons use Coition, by weakening their Solids they still further hinder Digestion and Perspiration, and consequently must thereby encrease in Bulk and Weight ; unless such a Diminution of that Evacuation be compensated by the Encrease of some other ; as it may very likely be by a *Diarrhæa*, according to the following.

A P H. XXXVII.

Coition without satiety hinders Perspiration, because it abates the Strength, whence the Body becomes heavier, unless a *Diarrhæa* happens upon it.

A P H. XXXVIII.

Coition to excess does a great deal of Harm, by heating and drying the Body ; but if the Heat be supplied by insensible Perspiration, and the Dryness by any proper Liquor, there follows no Injury.

E X P L A N A T I O N .

The Body is rendered hotter upon Coition, by the Motion it gives to all Parts, and dryer by the Attrition and Wast of a great Quantity of animal Juices, but if afterwards there be procured a free Perspiration of all the Parts, the Fibres will soon be recruited with a fresh Stock of Moisture, and thereby will both that Heat and Dryness be removed.

A P H. XXXIX.

Such a Motion of the Body, as resembles that of a Dog in Coition, is more hurtful than a bare Emission of *Semen* ; for the latter wearies only the internal Parts ; but the other tires both the Bowels and Nerves.

E X P L A N A T I O N :

What is meant by wearying the internal Parts most, I do not understand. Any violent Motion however occasioned, and in whatsoever Part, especially when it is attended with intense Thought at the same Time, will soon by the Consent of Parts, be felt in its Consequences all over the Body.

A P H. XL.

To use Coition standing after a Meal is hurtful ; because as it is upon a full Meal, it hinders the Offices of the Bowels ; and by the standing Posture, those of the Muscles, and diminishes that Quantity which it is beneficial to get rid of by Perspiration.

E X P L A N A T I O N .

The Consequences of Coition upon a full Meal, hath been explained already under *Aph. XXXIII.* of this *Section.* That such a Posture, as Standing, may occasion a greater Strain upon the Muscles at such a time, is not very unlikely.

A P H. XLI.

Coition is injurious after Exercise ; after Meat not so much ; but after Sleep it is the most wholesome of all.

EXPLANATION.

By Exercise it is to be supposed the Solids have been already exhausted of a great Deal of their proper Moistures, and therefore cannot be in any good Condition to engage in a fresh one, that of it self requires a good Stock of Spirits. Coition after Meat, as it is circumstanced may be worse, or not so bad ; but after Sleep it is least prejudicial, because then the Solids are plentifully furnished with fresh Spirits, and it is of Service to use any easy Means of drawing them up into that State of Contraction, as they must necessarily be in when awake. Coition therefore at this time not only assists in this good End, but at the same time, (as it was before explained of Yawning and Stretching) assists in shaking off such Parts of the perspirable Matter, as frequently are apt to lodge in the Excretory Passages.

A P H. XLII.

Coition heats the Liver, and cools the Stomach ; from the Stomach proceeds crude Moisture ; from the Liver, Choler ; whence arises that kind of Choler which is called *Porracea*, the Colour of it resembling that of a Leek. The Remedy is a slender Diet and a free Perspiration.

EXPLANATION.

The same Cause does very often differently affect different Parts, insomuch that what occasions a greater Heat in one, does frequently cool another ; and thus Coition as it exercises the Muscles of the whole Body, and gives them very strong Contractions, may at the same Time heat the Liver by occasioning

caſioning a greater Protruſion of Blood into it, that it cools others, by keeping them in ſuch a Tension, as will not admit of their neceſſary Influxes of Blood. For upon a univerſal Contraction of the Muſcles, the Blood muſt neceſſarily be thruſt forward the faſter, and where there is the leaſt Reſiſtance there will be the greateſt Quantities of it derived ; all the *Viſcera* therefore, and rhe Liver eſpecially, by the great Store of Blood Veſſels with which it is furniſhed, by their diſproportionate Reſiſtance to the Muſcular Parts, muſt be at ſuch Times overcharged with Blood, and conſequently rendered hotter ; but ſuch a Part as the Stomach, which is endued with a vaſt Number of Nerves, in proportion to the Quantity and Bulk of Blood Veſſels, will by ſuch Contractions be ſo far drawn into Conſent, that not only muſt it be rendered cooler by too ſmall a Share of Blood, but alſo will it be over-ſtrained, as afterwards to fall ſo far into the other Extream of too great a Relaxation, as to admit of a greater Derivation and Diſcharge of that ſaline Juice, which is accuſtomed to be ſeparated by its Glands, than before, and thereby will it not only be rendered cooler, but alſo overcharged with what *Sanctorius* in the *Aphoriſm* calls crude Moiſtures ; why a ſlender Diet is a good Remedy upon ſuch Diſorders may be upon two Accounts, both as it lays not too great a Load upon the Stomach, whereby its Fibres again in a ſhort time will recover their natural Springs, and be able to manage as large a Meal as before, without any Inconveniency ; and as it ſubtracts from the Bloods uſual Supply, it in time leſſens its Quantity, whereupon it is again circulated in all Parts in its natural Quantities ; and ſuch partial Stagnations prevented, which otherwiſe it would be apt to fall into, and by forming preternatural Cohesions and Viſcidities, occaſion dangerous Obſtructions. But this Diet as it ought to be ſlender, that is, ſmall in Quantity and eaſy of Diſteſtion ; it ought alſo to be ſuch as affords a good Supply of Spirits to the Solids, that is ſuch as we commonly call warm and ſpirituſous ; for otherwiſe the Fibres would continue ſo long relaxed, that the Fluids would be gone ſo far into preternatural Cohesions, as not eaſily afterwards to be broke, and continued in their due Circulations, and whereupon there might be given Riſe to ſome untoward Diſorders.

Medicina Statica.

S E C T. VII.

Of the AFFECTIONS of the MIND.

A P H O R I S M. I.

Amongst the Affections of the Mind, those of Anger and Joy, make Persons lighter; those of Fear and Sorrow, more heavy; and the other Affections operate in Proportion to their Participation of these.

EXPLANATION.

This *Section* is attended with much more Difficulty as to its Explanation, than any of the former, because the *Propositions* herein contained are not demonstrable in the same Manner, as those which relate only to the Agency of physical Causes. For as it was before taken Notice of under *Aphorism XV. Section V.* the Operations of the Mind upon the Body, and *e contrà*, do not come under a mechanical Way of reasoning; it being impossible to decypher and trace out the several Steps and Ways of Procedure of those Agents, which can by no means be brought under the Cognizance of our Senses. In Enquiries therefore of this kind, there must be allowed some farther *Data* than need be in such as are merely physical; so that a Person engaged herein, is like a Traveller who has a great way been conducted by Lanes and

Caufways, where he had fuch Marks continually in View, as prevented his going out of his Road, but at length comes to a wide Common, where the multitude of Paths without Distinction, makes him ftop and recollect, by what Guides he can with the moft certainty profecute his Journey; whereupon for want of readier Means, he finds himfelf obliged to have Recourfe to his Compafs; which by constant Obfervation finding the Needle always towards fuch a Point, and to conduct him with Succefs, he learns thereby upon all fuch Emergencies how to direct his Courfe, although he is ignorant entirely of the Cause why the Needle fhould always have that particular Inclination. And thus although a Perfon cannot tell either how Thought can produce fuch a Change in the Humours of his Body, or how fuch a Conftitution of the Humours can effect the Paflions of the Mind, yet if by constant Obfervation and Experience it can be found that fuch a Paflion or Temper of Mind is always attended with fuch Confequences in the Conftitution; and that fuch a particular Temperature of the Conftitution, always affects the Mind with fuch particular Paflions and Difpofitions, it will afford very fufficient Ground of Certainty to a wary and confiderate Perfon, in his Reasoning upon their Confequences; and in the Measures which ought to be taken in rectifying the Diforders of either. As for Inftance, if Anger or Chearfulnefs are always found to render the Body lighter, although we cannot tell how thofe Particular Paflions do firft modify any Parts of the Body, fo as to produce that Effect, yet it being plain how physical Agents do the fame, it is highly reasonable to conclude that thefe do it alfo by the fame Means; that is thus far, as we know that an Invigoration or an Encrease of the contractile Force of the Solids will promote Digestion, encrease the Evacuations, and render the Body lighter, fo we have the higheft Reason to believe, when we fee the fame to be the Confequences alfo of a Man's being paflionately angry, or very merry, that thefe Difpofitions of the Mind, (although we do not know how) do give that particular Modification likewise, and degree of Tention to the Fibres, as cold Bathing, a cold clear Air, or moderate Exercise, when we fee them attended with the fame Confequences. And as we know thefe physical Causes have this effect, by drawing up and shaking the conftituent *Machinulae* of the Fibres, promoting their Elaftick Powers, and breaking the nervous Juice finer, fo ought it to be concluded,

cluded, that these Passions of the Mind do also give the same Modifications to the Fibres, by which the same Effects are produced. Further in the like Manner, if Fear and Sorrow are found to be attended with an Encrease of Weight, it is reasonable to think that they do it by the same Means, as by which all those physical Agents produce the same Effect; that is by slackening the Fibres too much, abating Digestion, and consequently also lessening the Evacuations.

With this View therefore may we proceed in our Reasonings upon the Contents of this *Section*, with some tolerable Clearness and Satisfaction. That is, when any Passion of the Mind is said to have this or that Effect upon the Body, we ought to consider that Passion only as a physical Agent; as it draws up or slackens the Fibres, and as it encreases or lessens the Evacuations; but in this we are guided only by Observation and Experience, which is abundantly sufficient to a Person of any tolerable discerning; for by the present State of the Secretions and Evacuations it is always easy to tell so far, whether the Solids are too slack or too strait, and on which Side the *Equilibrium* is lost between the contractile Force of the Solids, and the Resistances of the Fluids: And whereas by the present Condition of the Body, it will easily appear on which Side the Fault is, so when any Error therein happens, without any other manifest Cause than a Passion of the Mind, it is highly conclusive that such an Error is owing to that Passion; and that it is brought about by the same Means as by any physical Agent; that is, by drawing up their Fibres too strait, or by letting them down too low, and therefore that for its Remedy, ought the same Intentions of Cure to be pursued.

Upon this View, the *Aphorism* above may very easily be explained. Anger and Joy keep the Fibres in their natural Tensions, assist the Secretion and Derivation of Spirits to all the parts of the Body, and consequently promote Circulation, and Digestion, and raise thereby a plentiful Perspiration, and render the Body lighter; but Fear and Sorrow as they give a quite Contrary Modification to the Solids, and a different Determination of the Spirits, they are always attended with the opposite Consequences. All the other Passions also as they are more or less compounded of these, are followed with correspondent Effects in the Body.

A P H. II.

In Fear and Sorrow the lightest perspires, but the heaviest Matter remains behind ; in Anger and Joy there is a good Perspiration of both.

EXPLANATION.

By Fear and Sorrow the Solids are so much slackned and injured in their Springs, that Digestion is but imperfectly carried on, and therefore the grosser Parts of the Juices will not be sufficiently broke for Perspiration, but be obstructed and lodged in the Capillaries, although indeed some of the finer Parts may get to the Surface and fly off ; whereas the contrary Affections so differently dispose these Instruments of Digestion and Perspiration, as to occasion the Expulsion even of the most gross Matter.

A P H. III.

Hence it comes to pass, that those who are subject to Fear and Sorrow, are apt to be troubled with Obstructions, a Hardness in some Parts, and to hypocondriacal Affections.

EXPLANATION.

Because that part of the perspirable Matter which by those Means is retained, is by Degrees thrown upon some Parts and collected in such Quantities, as to occasion manifest Tumours and Distentions. And as such Obstructions have been before proved both to give an Acrimony and Sharpness to the retained Matter, and also to occasion a greater Derivation of it upon the *Viscera* where it meets with the least Resistances, it is very likely that by the same Causes likewise, there should all these Symptomes arise which go commonly under the Name of hypocondriacal Affections, as Distentions of the *Præcordia*, Flatulencies, and cholick Pains ; and to this Purpose it is very remarkable how seldom it is that we meet with

with a Person addicted to Sorrow and Melancholy, who has not a considerable Share of such Complaints.

A P H. IV.

Those who are angry or chearful do not feel much Weariness in Travelling ; because their Bodies easily perspire the gross Matter ; but it happens quite contrary to this when they are troubled with Fear and Sorrow.

EXPLANATION.

This may be upon a double Account, both as in such Persons there is a more plentiful Afflux of Spirits upon the Solids, and because by the Diversion of the Thoughts, by some pleasing Images, from what passes from without, that Weariness which otherwise would be felt, is not taken Notice of, and thereby does it not occasion any Uneasiness ; but Persons under the contrary Affections, as they are thereby dispirited, and as their very Thoughts give them a considerable Disturbance, it is from a very slight Exercise, that they will find a great deal of Weariness and Disorder.

A P H. V.

The heavy part of the perspirable Matter, being more than usually retained in the Body, it will dispose a Person to Fear and Sorrow ; but the lighter Part being obstructed, to Anger or Joy.

EXPLANATION.

This is the Reverse of the first *Aphorism* of this Section, and universally it holds good with the Alterations that are brought about in the Body by the Mind, and the Changes which are made in the Affections of the Mind by the different Temperature of the Body, that what is the Cause at one time, may be the Consequence another, and *vice versa* ; for as Joy will occasion and promote a more plentiful Secretion of Spi-
rits

rits in the Brain, and give to the whole Body both Strength and Facility of Motion, so whatsoever promotes a good brisk Circulation, and keeps the Blood duly fluxile, will also raise the Mind with more agreeable Impressions, and dispose it either to Joy or Anger, as the Person happens to be entertained by external Objects. Thus also as Fear or Sorrow by checking the Motion of the Spirits, and hindring Circulation and Digestion, give a Heaviness and Sluggishness to the Juices, and occasions Obstructions; so whatsoever else obstructs the perspirable Matter, and induces a *Lentor* in the Blood, the same will also dispose the Mind to those Uneasinesses which arise from Sorrow, or Fear. By the lighter part of the perspirable Matter being retained, and Joy thereupon occasioned, I cannot understand what is meant, unless by that Matter be understood only such as the animal Spirits or Oil is made up of, and such as always promote, the Elasticity and Vibrations of the Solids; but then it is very difficult to imagine how this should be retained when much grosser Parts get out at the Surface and fly off. Here therefore *Sanctorius* seems to impose upon himself, by judging, that because an obstruction of a superfluous Matter is bad, therefore the Retention of a useful Matter is of Service, for although the nervous Fluid or animal Spirits is of such Importance, that the vital Offices cannot be carried on without a due Supply of it, yet a Retention of a greater Quantity than natural, even of these very Spirits would be attended with very ill Consequences.

A P H. VI.

Nothing more contributes to a free Respiration, than Comfort and Satisfaction of Mind,

EXPLANATION.

As a chearful Disposition very much assists in the due Performance of the vital Offices, by the means before explained, so it cannot but be very serviceable more particularly to Respiration, because this entirely depends upon those Requisites which this Temper of Mind has been proved to procure, *viz.* a Strength and Facility of Motion in the Solids, and a brisk Circulation of the Blood,

A P H. VII.

By Fear and Sorrow those Parts which are fullest of Moisture, are most apt to be rendered hard.

EXPLANATION.

The different Fluidities of the Blood in the several Parts of the Body are as its Velocity in each Part; and its Velocity in each Part is as the Force of the contractile Vessels and its Resistances; where then there is the greatest Resistance and the weakest Contraction, there the Blood will be thickest; in those Parts therefore where there is the greatest Quantity of Fluids in proportion to the Force of the containing Vessels, there must needs be the greatest Resistances, and therefore from any Cause that weakens the Contractions of the Vessels all over the Body, will the Fluids in that Part sooner stagnate than in any other, and acquire such a Consistence as to give a hardness to that Part.

As Grief therefore and Fear do abate of the Force of the Vessels in Contraction, those Parts where there are the greatest Collections of Juices, will the soonest suffer by a Stagnation, and an Induration of their Fluid Contents; and thus in melancholy Persons it is very common to find their *Viscera* Schirrous, but especially the *Spleen*, which naturally is formed for a *Diverticulum* to the Blood, and to check its Velocity in order to the Secretion of some Juices needful in the Oeconomy, and therefore is it most liable to these Consequences upon any Relaxation, and Abatement of the Force of the Blood.

A P H. VIII.

Sorrow and Fear hinder the Exhalation of the gross perspirable Matter; and the Obstruction of Perspiration, from what Cause soever it proceeds, occasions Fear and Sorrow.

EXPLA

EXPLANATION.

What that *Nexus* or Bond of Union is between the Mind and the animal Fluids, God Almighty only knows ; but there is not any one thing better confirmed by Experience, than that they mutually influence one another. See *Explanation* to *Aphorism V.* of this *Section*.

A P H. IX.

If Grief continues long, it will bring on a coldness of the Flesh, because it hinders the Exhalation of the grossest of the perspirable matter.

EXPLANATION.

It has already been shewn at large under *Aph.LXVIII.Se&.I.* that the *natural Heat*, which is what ought to be understood by the warmth of the Flesh, is as the force of the contractile Vessels ; whatsoever therefore lessens that Force, must also abate the natural Warmth, and that Grief does this, appears from what has gone before.

A P H. X.

From hence it happens, that those Feavers which a Person falls into after much Grief, discover themselves in cold Sweats, and oftentimes prove Mortal.

EXPLANATION.

Grief by its continuance, keeps the Solids so long in a state of Relaxation, that the Orifices of the secretory Glands, lye so far open, as to let thorough even that Balsamick Juice which is dispensed to the several parts of the Body for their Accretion and Nourishment, as well as for their Lubrication and the Maintenance of their Springs ; by which means the
Body

Body is robbed of its most necessary Juices, which, by their aptitude to Cohesion, and the small *Momentum* or Force with which they are brought to the secretory Orifices, as soon as they are thrust thorough, they stick to and lodge upon the Skin, and occasion that greasy Clamminess, which is commonly called a cold Sweat.

And from hence may be deduced a considerable confirmation of what has been already advanced, in the Digression concerning an *animal Fibre*, about the animal Spirits; for upon all Relaxations, when this Oily or Balsamick Juice is wasted in the manner above mentioned, there is immediately felt a very great decay of Strength and Vigour; and as a Person commonly expresses himself upon such Occasions, he is quite faint and dispirited: which I cannot but think is a very manifest Proof that those Spirits by which we are made chearful and ready for Motion, are nothing else than the Juice here spoke of, which when it is supplied to the Solids in due quantity, gives such a modification to them, as readily enables them for the performance of their respective Offices; but when its Supply is either cut off, or when its Waste is too great for its Supply by Exercise or an Enlargement of the excretory Pores, then they grow disabled and unfit for Action.

The reason why Feavers are so dangerous which happen upon such a feeble Disposition of the Solids is, because the Constitution is not then able, either to digest and wear away any obstructed matter, by any of the natural Evacuations, or to continue their Contractions until any morbid matter, arising from the fermentative Motions of the Fluids, is expelled, either by some natural Discharge, or by an Abscess.

DIGRESSION IV.

Of the Difference between Inflammatory and Nervous Feavers.

And here it may not be amiss to take notice of the difference between an inflammatory Feaver, and a nervous Feaver, or as People commonly word it, a Feaver of the Blood, and a Feaver of the Spirits.

How a Feaver is raised by an encreased quantity of Blood, has been particularly explained under *Aph. XLVI. Sect. I* and such a Feaver is properly call'd Inflammatory, because it is attended with such a prodigious Heat, as is little less than that of boiling Water; the natural Moistures are exhale in such quantities as to occasion a Dryness upon the Surface, and wheresoever they have room to fly off, and more especially from the Mouth, so much as to occasion an insatiable Thirst; the Colour is wonderfully raised, and the Eyes seem to sparkle with Fire. It either goes off by an encrease of some Evacuation, generally by that of the Skin, or continues until the Solids are so overstrained and defrauded of their due Moistures, as not to be able any longer to continue their Contractions, and then ends in Death. Herein all *Stimuli*, and whatsoever has any tendency to encrease the celerity of the Blood, are fatal; but nothing is so destructive as Blistering, and spirituous Juleps, as was before observed in the *Second Digression* concerning *Agues*, notwithstanding the common Practice runs very much this way; and although some Persons have advanced Theories, on purpose to establish it, the most labour'd, of which, is that of *Dr. Cockburn*, about the Operation of *Cantharides*, and the manner by which they are serviceable in Feavers; but the fallacy of them is very manifest both from Reason and Experience, as may be easily made appear to any considerate Enquirer; who likewise may find something very rational upon this Subject in *Baglivi's Dissertation de Usu & Abusu Vesicantium*. But to return, almost any evacuation in this kind of Feaver, especially if timely procured, is of Service; but that of the cuticular Discharges, is generally of the greatest Advantage; for if it can be plentifully raised, it hardly ever fails either of quite termi-

nating

nating the Feaver, or bringing it to an Intermission. This most commonly attacks young People, and those that are most Robust and Sanguine. It generally has its Cause in the diminution of some of the natural Discharges, by which although the Blood at first is the same in quality, yet by the encrease of its Quantity only, will it raise a Feaver, as above cited.

But the latter, *viz.* a nervous Feaver, appears in a very different Shape, arises from very different Causes, and requires a very different Management; and is not unjustly called a Feaver of the Spirits, because the Patient from the first Attack, is Pale, Feeble, and Sluggish; has a low short Pulse, feels rather Cooler than Natural; and has little or no Thirst. All these Symptoms will go off at first sometimes for a few Hours, and the Spirits seem to return, but they soon appear again, and frequently with slight Rigours and Shiverings, whereby a Physician not well apprised hereof, is apt to be drawn into a Mistake, and taking it only for an *Intermittent*, fall upon immediately with the never failing *Bark*: but after a few shifting and delusive Appearances, the Patient at last is tyed down to his Bed, and grows so stupid, as to be sensible but very little of his Danger, or of what passes about him; he begins to fumble with his Hands, stammers with his Tongue, if he is not quite Speechless, and at last has very little Appearances of Life besides a general Convulsion of the whole nervous System, but especially of the Stomach, where they are dispersed in greatest numbers; which occasions Hiccups, and if Death does not close the tragical Scene, it looks more like a Resurrection than a Recovery. Towards the latter end sometimes appear spots under the Skin, which the more florid and lively they are, it is the better Symptom, but worse where livid or dusky. It is common to fall into a Loosness, and have a discharge of very black fetid Stools, and sometimes also of a Urine of the same Colour. The sensory Organs frequently loose their Offices, insomuch that they have not been able to discern broad day light, nor to hear a Person speak very loud; the latter Symptom has been observed to be almost an infallible sign of a Recovery, although the reason of it I confess at present lies out of my reach. But whensoever there is a Recovery, there seldom is any visible *Crisis*, but all the Symptoms as they insensibly came on, so they generally go off; and this further is also very remarkable, that a great many Persons after their Recovery from these kind of Feavers, have not under a long time, if ever, regain-

ed that quickness of Sense and strength of Mind, as they before enjoyed.

It is very certain, that an Inflammatory Feaver very often changes into one of this latter kind ; which happens when the Solids are able to continue their Motions so long, that the overcharge of Blood is wore away, but by that time they are so far over strained, and injured in their Springs, as not to be able to carry on the Fluids with such a Celerity, as is requisite to prevent their falling into Fermentation and Putrefaction ; and therefore as that Heat goes off which was occasioned by an encreased Quantity and Velocity, another arises, tho' much more languid, from its intestine and fermentative Agitation. And as the Feaver thus changes its shape, so ought also its Intentions of Cure to be differently regarded.

As the former kind generally arises from a diminution of some of the Evacuations, and an overcharge of Blood, so this latter most commonly has its Rise, from an Excess in some of the Discharges, from hard Exercises, from too sparing a Diet, from long trouble of Mind, from an immoderate use of Venery, and frequently from Epidemical Contagions : the efficacy of all which things upon the Constitution, make it very plain that the immediate cause of this Feaver, is in the distemperature of the nervous Fluid, either as to its Quality or Quantity ; whereby it is rendred unfit to give that Elasticity to the Solids, as is necessary for their Contractions, and the carrying on the Animal Fluids with their due Velocities ; whereby, as was said before, they fall into Intestine and Fermentative Motions.

That the remote Causes are frequently in the Constitution of the Air, cannot be questioned by those who consider the many Instances wherein this Desease has in one Season, and in the same place swept away vast numbers, all of them no farther differing in their Symptoms, than what may readily be accounted for, from the difference of those Constitutions which have been seized with it. But these have most generally happened after long sultry Weather ; by which the spring of the Air is much broke, whereby that part of it which mixes with the Blood, is not sufficient to raise its Globules, and keep them from running into mutual Contacts and Cohesions, and also by keeping the cutaneous Pores long open, there is such a waste made of the nervous Juices, as to damage the Solids in their Contractions, and induce a general Relaxation ; especially if a damp moist Air follows upon such Heat.

Any Evacuation so as to cut off the supply of the nervous Juice, cannot also but be attended with the same Consequences, for the Reasons frequently given under the *Aphorisms* of the foregoing *Sections*; the *Lancet* therefore, (with which some are so very busy whenever they get any thing to deal with that can be called a Feaver,) in these Cases ought to be avoided as Death it self; as likewise all those *Catharticks*, those Friends to Nature, with which some Enthusiasts pretend to purge off the peccant Humours. And to this purpose it is very remarkable, that all those Feavers which fall in upon, or sooner after, the Courses which are generally gone thorough in Venereal Cases, especially *Gonorrhæa's*, are of this kind; for by frequent Purging, and Evacuating several ways, the Solids in time come to be robbed of their proper Supplies, and thereby for want of their usual Springs, are apt to let the Blood fall into intestine Motions, and run into preternatural Cohesions. The Medicines indeed herein frequently made use of, do not bring about this ill Disposition only as they are purgative, but also as they at the same time give a numbness or insensibility to the Solids, as it is very well known that *Mercurials* will do.

By unusual Evacuation by any of the sensible Discharges, not only the Solids are defrauded of their proper Moistures, but also by its Diversion of the perspirable Matter for some time together, or lessening at least the Quantity which ought to pass the Skin, in proportion to the encrease of any other Discharge, the cutaneous Pores will be so much lessened in their Capacities, as with much the greater difficulty to be brought to admit of such a Discharge thorough them, as is necessary for the Termination of a Feaver by its most natural *Crisis*. Of this I have had an uncommon Instance very much to my own Cost, who about Two Years since, all at once left off Claret and stale strong Beer, out of a fondness for a home brewed Pale Ale, which by drinking it daily, and that something new, altered the Evacuations by Stool from about once in Twenty Four Hours, to Six or Seven Times. But in about Six Weeks I insensibly dropped into one of these Feavers, attended with such a *Delirium* or rather Stupefaction, as not to be able since to recollect the least Remembrance of any thing that passed for near Three Weeks together, although in that Time I was almost dead with Blisters, and had one laid all over my Head a whole Week; nay further, what is most of all strange to me, about a Week before I

was sensibly out of order, there were some Affairs I went thorough, to me of the greatest Importance, which never since can I remember any thing of, and should very hardly be brought to believe, were it not apparent by the most convincing Evidences ; and yet the very Persons concerned with me in those Affairs, tell me that they discerned no manner of Disorder in my Head, nor do some Matters there transacted, discover any such thing.

Whatsoever brings this melancholy Scene to my Remembrance, does also always remind me of what I owe to the Advice of a Physician, who is now by all confess'd to be the greatest Ornament of his Profession ; for (so unexpected sometimes are the consequences of good Designs) without it, or a Miracle, neither had this been added to the number of Books, with which the World is already encumbered, or had his generous Goodness the uneasiness of meeting with so publick an Acknowledgment.

If then there is any thing in all this, as I believe but very few who have any Notions of this matter will question, what Hazards do they run, who, under a Notion of cleansing the Blood, and purging off Scorbutick Humours, are almost continually drenching themselves with Medicinal Drinks, such as Scurvy Grass, *Butler's*, and Colledge Ales? in the tripling of which some seem wonderfully to bless themselves, as having found out a much more happy way to clear themselves from ill Humours, than by the nauseous Doses of an extorting Apothecary ; but let such assure themselves that thereby they are pursuing their own Destruction, for keeping the Body in such a lax State, entirely ruins the Offices of the cutaneous Pores, the benefit of which discharge they cannot but frequently happen to stand in need of, and likewise does it in time procure such a general Imbecillity in the Solids, that they will be but in an ill Condition to weather the several Changes and Accidents of Life, especially when attacked by Feavers, or any Distemper of Moment. Drinkers of the Purging Waters, and particularly those who dose themselves with that notorious Cheat, commonly called *Epsom-Salt*, likewise lye liable to the same ill Consequences ; for a long use of them will so far destroy the best Constitution in the World, that if it does not immediately bring on a dangerous Feaver, of the kind that we are now speaking, it never fails of being followed by so many Shocks and Disorders, as cannot but the sooner wear it out, and shorten both the Enjoyments of Health and Life.

This

This kind of Feaver then which is commonly called Nervous, or a Feaver of the Spirits, arises from a *Fermentation of the Animal Fluids*, such a *Fermentation* I mean, as is explained in the first *Digression*, which arises from the weakness of the contracting Vessels, whereby they are not able to give that Motion to the component Parts of the Fluids, as is necessary to prevent their running into Preternatural Cohesions; that is, the Force impressed upon them by the contractile Vessels, is not so great as that attractive Power by which they are drawn into mutual Contacts with one another, and therefore at all such Times do they coalesce into Particles of different Bulks and Dispositions, than what are necessary and useful for the Animal Machine, and from what the Secretory Organs are naturally constituted to seern. And this is the Feaver, which may justly be called Putred, because there is really such a Change brought about in some or all of the Animal Fluids, as is truly a Putrefaction or Corruption. Of this kind also I take those to be which are called *Malignant*; although I know but little use of the Distinction, unless it be to those who have got a Knack of showing their Learning more by their Knowledge of Words, than of Things.

And for a considerable Confirmation that this is the state of the Animal Fluids, in this Distemper, I cannot but think it will go a great way, when we consider, what black fætid Stools often happen after it has set in some time, or for want of them if the Patient recovers, those Abscesses which frequently arise, and discharge a very stinking Matter of the same Colour; for these are plainly nothing else than a Despumation of the Juices, which during their Fermentation, raised and threw off either by the Glands of the Intestines, or by an Abscess such Particles as by their peculiar Figures and Gravities were not fitted to make a part of, and continue their Circulations with the remaining Mass, as it happens to all fermented Liquors whatsoever. But when the contractile Force of the Solids, cannot be maintained until this Depuration and Discharge is made, Death must of necessity ensue. Sometimes indeed this Matter, which truly may be called the morbid or peccant Matter, is thrown upon the Surface, and appears under the Skin in spots of various Colours, as Red and Florid, Dusky, Lîvid, and sometimes also quite Black; and as this Matter is chiefly raised from the grumous parts of the Blood, which for want of due Agitation, ferments, and puts on new Shapes and Properties; so the farther it de-

generates from its natural State, the more it loses of its natural Colour, and like Blood drawn out of a Vein and stagnant in a Porringer, will, the longer it stands, and the nearer it approaches to Putrefaction, lose still more and more of its natural Colour, and change at last into Black ; so may pretty certain Prognosticks be taken of the condition of the Patient from these Spots.

That Persons in this Case are so stupid, and at last convulsed, is not much of a wonder, because the Cause of it consists so much in a previous diminution of Spirits, and a general Flaccidity of the Fibres, that after the Distemper has set in some time and the constitution of the Blood so destroyed, as not to afford any Recruits, it is almost impossible it should be otherwise ; for hereby the Nerves are not in a condition to be so affected by external Objects, and to give such a Reflux of Spirits, as is necessary to convey to the common *Sensorium* any notices about them ; whence the Stupidity ; and by the extraordinary waste of this Fluid, some of the *Fibrile Machinulae*, may be duly moistened to perform their Motions, when others are so dried, as not to be under any capacity of Distraction, and therefore must their Contractions be performed very irregularly, and instead of keeping up those steady Vibrations which they ought, fall into disorderly Starts and Ketches, whence the Convulsions.

The whole then being taken in this View, it very plainly appears, that the most likely way to save the Patient in these Cases is, by keeping up the Contractions and Vibrations of the Solids by all the Means possible, and to hasten forward as much as can be the depuration of the Juices, and the discharge of that peccant Matter or Spume which is raised thereupon by some of the Emunctories, which peccant Matter sometimes is found to be but very little in quantity, although by the expulsion of it, there is immediately a manifest Recovery, insomuch frequently to be not easily perceived by what Discharge it goes off. This Matter also appears to be in every Person so peculiarly modified, as not to admit of its Expulsion, equally by any of the Evacuations, but in some it is thrown off one way, and in others by different passages ; and this is the reason why it is to no purpose to attempt to draw it off by any of the Evacuations, before it is found by which Nature her self is disposed to expel it ; and agreeable to this, Experience instructs us, that one Stool sometimes goes further than twenty times the same quantity, thrown off by

by any other Discharge ; sometimes this matter comes away by Urine, sometimes by Sweat, and sometimes insensibly. But there is one Secretion in this Case, which I have known to be enlarged upon a Recovery, and which I cannot but think has answered the same End, and that is by the Ears ; which will not appear strange from the smallness of the Quantity, which is capable of being thrown off this way, to any one who considers by what minute Agents the Animal Fluids may very strangely be disordered : and it may perhaps be no unreasonable Conjecture, that the protrusion of this Matter upon that Organ, is the true Cause of the Deafness before taken notice of in this Distemper, and that therefore it is so good a Symptom, as it is a sign that the Blood is able to depurate and rid it self of the peccant Matter.

It may be owing to the want of this Distinction, between this kind of Fever, and that which is Inflammatory, that Dr. *Pitcairne's* Theory, *De Curatione Februm* before taken notice of, is not of so much Service as it otherwise might have been ; for it can hardly be imagined that the Dr. thought it applicable to all kinds of Fevers ; but only to such as without any previous Indisposition, either in the Constitution of the Fluids, or in the Elasticity of the Solids, arise immediately from an encrease of the Bloods quantity, upon the Diminution of any of the natural Discharges, but especially of that, by insensible Perspiration. For there it is plain, that the Quantity drawn off, if it be in time, does the Business, by restoring again the *Equilibrium*, between the Solids and the Fluids, and therefore that it is best done by those Evacuations as will admit of the greatest enlargement ; but here it is not the Quantity to be discharged that signifies any thing, but the Nature and Quality of it ; upon which account, as was said before, it is not equally to be drawn off any way, but only by some particular Evacuation, by which it is naturally fitted to pass off ; although even this it self cannot sometimes be done, and then it is that we find it collected into an Abscess.

But as the greatest Difficulty lyes in keeping up the Pulsations of the Solids, until all this is brought about, to the greatest Effort must be made to this purpose ; and this is to be done both by the application of *Stimuli* externally, and by furnishing the Solids as much as possible with fresh Supplies, from generous good Cordials, and Volatile Spirits. In this Case therefore it is that the *Volatile Alkali* of the Shops have their place, and not only as they serve to keep up the

Vibrations of the Solids, but also as by their Lightness and Action they help to preserve the agitative Motion of the Fluids, and in a great Measure prevent their running into preternatural Cohesions. Those called Perfumes also have herein been found of Service, although at other times perhaps they might have proved very offensive and prejudicial, as Musk, Ambergrease, and the like. But for answering the other Intention, of keeping up the Contractions of the Solids by sharp *Stimuli*, we must be beholden to the *Cantharides*; for herein it is that they are not only useful but necessary. Those Gentlemen therefore who are so fond of Blistering, may here indulge their Opinions without Hazard, for the only ill Consequences they can be attended with in this Case, is a Mortification upon the Part, and even that sometimes in prudent Hands may be turned to an Advantage. What is discharged by these, I cannot conceive to be of any great Importance, the Service they do, is by spurring the Solids, and keeping up their Pulsations when there is little else to do it; and also by a great many subtile active Parts, which get from them into the Blood, are the Fluids more briskly moved, and those Parts which have already run into preternatural Cohesions, are, as by the Volatile Alkali's before spoke of, the oftner struck upon, and thrust forward, until by some Outlet or other, they are expelled the whole Mass.

A P H. XI.

That Acrimony of the perspirable Matter which is obstructed by long Sorrow, may with Advantage be taken off by Chearfulness: for pleasing Humours are thereby diffused throughout the Body, and thereby both its Weight and Sharpness is removed.

EXPLANATION.

Any preternatural Acrimony of the Juices, which has been contracted by their want of due Motion and Attrition, cannot but be taken away by any means that encrease the Force and Vibrations of the Solids; as Grief therefore by weakening that Force occasions this Disorder, so Chearfulness by

by restoring it again, proves a Remedy. By pleasant Humours being diffused thorough the Body upon Joy, I can understand no more, than that Joy gives such particular Modifications to the Nerves, as facilitates the Derivation of that Juice to them, which gives them their Springs, and enables them with the more Ease, to discharge their several Offices; the Consequences of which cannot but be a better Digestion, and a more plentiful Perspiration.

A P H. XII.

Anger and Hope remove Fear, and Joy takes away Sorrow : for a Passion of the Mind is not to be conquered by Medicine, but by some contrary Passion ; for Contraries are under the same *Genus*.

EXPLANATION.

When any Passion is suddenly raised by some external Cause, it is not expected that a Person should take Physick to get rid of it, nor is it possible to assign the Instruments and Means by which any Change therein can be effected. So far only of the Affections of the Mind, does therefore concern a Physician, as can by constant Observation be found to be under the Influences of the particular Tempers of the Constitution ; as where by Experience it is found, that any particular Disorder in the Blood, in time, also influences the Faculties and Powers of the Mind, and disposes it either to Anger, Melancholy, or the like, then there appears some good Grounds for calling in the assistances of Medicine, whereby to rectifie such a Distemperature of the Blood. As it appears also, that some Passions of the Mind will insensibly bring about Disorders in the Constitution, so to prevent such an ill Consequence, it may frequently be of Service, to excite, if possible, some contrary Affections ; but *Sanctorius's* Reason for it, because Contraries are under the same *Genus*, it is to be feared, but few will be the better for.

A P H. XIII.

It does not imply a Contradiction, that the retained perspirable Matter of Melancholy Persons is Cold; and at the same time Sharp or Hot; for so is the Liver of Hydropicks in Feavers; to wit, Cold in respect of the natural Heat, but Hot with regard to that which is adventitious.

E X P L A N A T I O N.

It is here necessary to distinguish well between what is meant by the *natural Heat*, and that which he calls *Adventitious*; the First, as before explained, is, that which arises from the Motions and Attritions of the Humours; where therefore there happens an overcharge of Fluids, by means of an imperfect Perspiration, as is commonly the Case in Melancholy Persons, the Solids will not be able to give them sufficient Agitation, whereby there will be a decrease of the natural Heat; and some of the Juices also by the same Means may acquire an Acrimony or Sharpness. But as in a little time, such obstructed Humours will begin to putrify, and so by a fermentative Motion, put on a preternatural Heat; they may with regard to that, be said to be Hot. And this is the Case with the Liver of Hydropicks, or any part where there is so great a collection of Humours, as to occasion a Stagnation, and a Tendency to Putrefaction.

A P H. XIV.

Diseases that arise from Melancholy, and from a foul Air, agree in this, that they immediately proceed from the grossness of the obstructed perspirable Matter: for Grief does intrinsically prevent its Discharge, and a foul Air, extrinsically.

EXPLANATION.

The Reason of their Agreement herein, seems to be but indifferently founded. It is plain, that both of these Causes hinder Perspiration ; a foul Air by hanging upon the Skin, and obstructing the cutaneous Passages, and Grief by preventing a sufficient Derivation of nervous Fluids, to the several Organs, to keep up their Contractions strong enough for a due Digestion. And as the former also will in time supple the Fibres, and render them too lax, so in this they may agree, that they both injure their Vibrations, and thereby are attended with the same consequences of Indigestion, and an overcharge of Juices ; but the manner by which this is brought about, by both, is very different, upon other Accounts, as well as one being from within, and the other outward.

A P H. XV.

They who go to Bed with Grief, perspire thereby less in the Night, and the following Day their Bodies will be found heavier than usual.

EXPLANATION.

Because during Sleep, there is made the most plentiful Perspiration ; what Cause therefore soever would do it at another time, will with the more certainty, occasion it at going to Bed, because the Pores are thereby contracted, when by the Relaxation of the Solids, they ought to be enlarged. How Grief does this, has been already explained.

A P H. XVI.

In Venereous Desires, the grosser part of the perspirable Matter will be obstructed by Grief, which by the exhalation of the thinner part, will still grow more Thick and Cold. If it be collected together, it will occasion an insensible Chilliness in the Head, and a Palpitation in the Heart, or in some other Members, very difficult to be cured.

EXPLANATION.

Intense Thought, especially when attended with great Uneasiness, as it hinders the vibrating Motions of the Solids, cannot but very much obstruct the Passage, and Exhalation of the perspirable Matter; only the thinner Parts therefore will be able to get off, and thereby dispose the retained Matter by its Grossness, to occasion the greater Obstructions. The Consequences of which, as the Fibres will thereby be much defrauded of their proper recruits of Spirits, will be a Weakness and an imperfect Performance of the Animal Functions, especially in those Parts, which by their Offices, have upon them the greatest Share, as in those of the Brain and Heart.

A P H. XVII.

Melancholy is removed two ways, either by a free Perspiration, or by some continued Cheerfulness of Mind.

EXPLANATION.

This, as well as most of the following, by attending to what has been already explained, (that Grief hinders Perspiration, and that a free Perspiration will likewise remove Grief, if it can be procured; as also that Joy promotes Perspiration, and that Perspiration again tends to Cheerfulness) will

will appear to be little else than Repetitions, and therefore any Notes upon them will not be wanted.

A P H. XVIII.

If after Grief, the Body happens to be lighter, than after Joy, it must be either through a scarcity of Food, or by its being more than usually Perspirable.

A P H. XIX.

Chearfulness, from whatsoever Cause, opens the Passages, and makes a free Perspiration.

A P H. XX.

If, after Anger, Joy immediately follows, or the contrary, allowing the same proportion of Food, Bodies will the next day be lighter, than if Anger or Joy alone had continued.

EXPLANATION.

Because a continuance of the same Passion, by keeping the Solids under the same Modifications for some time, will not so much favour Perspiration, as a shifting them often by contrary Passions.

A P H. XXI.

As some great Pleasure is taken away by a small ejection of *Semen* ; so all immoderate Passions of the Mind, may be removed by some evacuation of the perspirable Matter.

A P H. XXII.

Fear and Sorrow, as it appears from *Statics*, are removed by a subtraction of the grosser perspirable Matter: but Anger and Joy, by that of the thinner.

A P H. XXIII.

If any one without manifest Cause, finds himself Chearful, it is occasioned by an enlarged Perspiration, and that Body the following Day will be lighter.

A P H. XXIV.

Moderate Joy insensibly evacuates what is superfluous: but Immoderate, what is also useful.

EXPLANATION.

This will not seem difficult, when it is considered what has been before said, about Exercise.

A P H. XXV.

Moderate Joy assists Concoction, for Nature disengaged from what is Superfluous, will the better perform her Functions.

A P H. XXVI.

Sudden Joy is more hurtful, than what is expected: for it not only promotes the Exhalation of the Excrements of the third Concoction, but also of the Animal Spirits; but that which is looked for, only of the Excrements.

EXPLA

EXPLANATION.

By Excrements of the third Concoction, is meant that perspirable Matter, which sudden Joy, like a Convulsion, forces out, but with it also, some of the Nervous Juices, which cannot be spared without Injury.

A P H. XXVII.

Joy and Anger carry off what makes the Body both more Heavy and more Light ; but Grief and Fear, only that which would make it more Light ; and leaves behind what makes it heavier.

EXPLANATION.

Of the former this is to be understood only where they are in Excess, else it contradicts the foregoing.

A P H. XXVIII.

A continuance of Joy several days together, would hinder Sleep, and sink the Strength.

EXPLANATION.

Because it would by a long continuance, give such a Straitness and Rigidity to the Nerves, as would prevent those Relaxations which are necessary to Sleep, and also for such derivations of Spirits to the Solids, as are needful to keep up the usual Vigour.

A P H. XXIX.

If any one, after immoderate Joy perceives himself lighter, it does not chiefly arise from a total Perspiration, but only from that of the Heart and Brain, where what is evacuated, is but little in Bulk, but of great Efficacy.

EXPLANATION.

This lies entirely beyond the reach of my Understanding.

A P H. XXX.

Meats which promote Perspiration, bring Joy, but those which obstruct it, Sorrow.

A P H. XXXI.

Parsley, and other Openers, occasion Joy : Pulse, fat Meats, and such things as incrassate, and soon fill up the Passages, induce Sorrow.

A P H. XXXII.

If the Passages are emptied, and then suddenly filled ; *Hippocrates* has rightly observed ill Passions will arise.

A P H. XXXIII.

Where Anger predominates, immoderate Exercise is very hurtful; for soon the Passages will be empty, and will with Violence be again filled; whence *Hippocrates* forbids Wraffling, and Frictions to Cholerick Persons.

EXPLANATION.

Anger keeps the Fibres too dry and crispy, by too much exciting their Vibrations; any Exercise therefore with such Persons, will encrease that Ill Disposition, by still making a greater wast of the Natural Moistures.

A P H. XXXIV.

In Persons who Exercise neither Body nor Mind, the Passages are not emptied, nor are their any bad Passions contracted.

EXPLANATION.

But it is to be feared, that much worse Inconveniencies will ensue in the Constitution.

A P H. XXXV.

A Body at rest, does Perspire more by the violent Exercise of the Mind, than if the Mind was at rest, and the Body violently moved.

EXPLANATION.

This will admit of a great deal of dispute, and in very few Instances will be found true.

A P H. XXXVI.

A Change of the Body, makes a more lasting Alteration of the Mind, than of the Body it self.

A P H. XXXVII.

Passions of the Mind, are conversant about Internal Subjects, which move more than they are moved; because they are like the *Semen* of great Efficacy, although little in Bulk; and according to their Dispositions, are the causes of Perspiration, or of Weight or Lightness.

EXPLANATION.

This is also too Metaphysical to be explained upon such Principles, as have herein been made use of.

A P H. XXXVIII.

Bodies which Perspire more than usual, not by Exercise, but by some violent Passion, are with the greatest Difficulty, brought to their wonted healthful Perspiration.

A P H. XXXIX.

Too much Exercise of the Mind, is more injurious than that of the Body.

EXPLANATION.

Because the Exercise of the Mind expends the finest, and most useful Parts of the nervous Fluid.

A P H. XL.

The Body would pine, and be destroyed by Idleness, was it not for the Exercise of the Mind; but not on the contrary.

EXPLANATION.

Where due Bodily Exercise is not used, that of the Mind will not be long sufficient, to keep it from falling into some bad Disorders.

A P H.

A P H. XLI.

Violent Motion of the Mind, differs from violent Motion of the Body; this is removed by Rest and Sleep; but the former by neither.

A P H. XLII.

They that are covetous ought not to Game; because if they always win, through excess of Joy, they will not sleep at Night, and at length will loose the Benefit of Perspiration.

A P H. XLIII.

A moderate conquest is more healthful, than one that is more Glorious.

A P H. XLIV.

Study which varies the Passions is better bore, than that which keeps them the same; because it makes Perspiration more moderate and more wholesome.

EXPLANATION.

It was before taken Notice, that a frequent shifting the Modifications, and Vibrations of the Solids, is much more advantageous, than keeping them continually in the same Tone, and therefore a Change of Passions, cannot but be much better than the same continued.

A P H. XLV.

Study without any one Passion will hardly endure an Hour, with one only, hardly four Hours; with a Change of them, as at Dice (in which is felt sometimes the Hopes of Winning, and at others the fear of Loosing) it may continue Night and Day.

A P H. XLVI.

In all Study, continued Sadness destroys the Good Constitution of the Heart; and excess of Joy hinders Sleep, for too much of any thing is an Enemy to Nature.

A P H. XLVII.

They who are sometimes merry, sometimes sad, sometimes angry, and sometimes fearful, enjoy a more healthful Perspiration, then they who continue in one Affection, although a good one.

A P H. XLVIII.

Joy assists the Diastole and Systole of the Heart: But Greif and Melancholly renders them more difficult.

EXPLANATION.

There seems to be so little variety, in the Sense of most of the Aphorisms of this *Section*, that if what has been said at the Beginning be attended to, an Explanation of a few of them, may serve for all, and therefore to avoid Repetition, I have given most of them without any Notes.

F I N I S.

THE INDEX

TO THE

Sections and Explanations.

A.

Se&t. Aph:

A bsolute Gravity, <i>what</i>	I	26
A bsolute Weight of the Body, <i>what</i>	I	29
Apparrel too thick, <i>how it hinders</i> Persp.	I	55
Air Cold and Moist, <i>how it hinders</i> Persp.	I	67
Warm, <i>how it promotes</i> Persp.	2	3
Several ways to know its Weight	2	4
Cold, if it Strengthens the Fibres, <i>cannot be</i> <i>hurtful</i>	2	7
Cold and Moist, <i>how injurious</i>	2	8
Moderately cool upon those who are Hot, <i>more</i> <i>injurious than when excessive</i> Cold	2	12
Cool after Supper, <i>how bad</i>	2	17
The Consequences of its sudden Changes	2	18
In the City why worse than in the Country	2	61
Absolute Heat, <i>what</i>	2	27
Æquinox, from the Autumnal to the middle of Winter Persp. decreases, and thence to the vernal Æq. <i>increases</i>	2	41
Autumn, <i>how Unhealthful</i>	2	42
And what will prevent it	2	43
What Courses of Physick then best	S. 2	A. 48, 49.
		Acirmony

	Sect.	Aph.
Acrimony, of the Perspirable Matter, what its Consequence	2	51
Activity, a sign of good Persp.	4	42
Act of Venery long continued, its Consequences	6	12
Amble, the most wholesome Riding Pace	5	27
Agitation of the Body in Coition, how hurtful	6	39
Anger, assists Perspiration	7	1
Prevents Weariness in Exercise	7	4
Alliment most perspirable, most conducive to Joy	7	30
What produces Melancholy	7	31

B.

B ulk, how conducive to Strength S. 1 A. 35, 36, 37		
How conducive to Health	1	93
Blood viscid, why lodged in the Cappillaries	1	95
Buboes, in the Plague, whence	1	127
Not from an Aduſtion of Humours	1	131
If they diſcharge the infectious Matter it is good, but if otherwise, not	1	133
Baths Warm, their Effects	2	2
Blifters, when hurtful	2	16
Phlebotomy, why beſt in Autumn	2	45
Body, better to decrease than increase in Bulk	2	58
Lighteſt in a Morn. upon a double Account	4	56
Bed Strange, hinders Perſpiration	4	25
Occaſions Dreams	4	26
How long needful to Lye in	5	11
Brain, how it Sympathizes with the Stomach	4	40
Briskneſs, a ſign of good Perſpiration	4	42
Boat Carriage, not ſo healthful as Walking	5	28
Unleſs long continued	5	29
Beauty, injured by much Sweating	5	36

C.

Sect. Aph.

Cold external, tho' small in Sleep hinders Persp.	I	50
Why it promotes Persp. in Robust, and hinders it in weak Persons	I	68
Upon one Part only how prejudicial	I	111
Intense, why not so bad as Mild	I	113
Sudden upon Heat, its Consequences	2	9
How soonest taken in Summer Nights	2	40
Crudities, how produced after too large Persp.	I	44
Prevented, keeps off Diseases	3	89
Catharticks moderate, how they lighten the Body, and if rough how they make it heavier	I	28
Cooling Things in Accute Feavers, how Fatal	I	116
Corruption of the Humours, how prevented	I	120
Carbuncles in the Plague, whence	I	127
Not from an Adustion of Humours	I	131
If they discharge the Infectious Humours it is good, otherwise not	I	132
Coffee, how it may prove hurtful	2	15
Concentration of the Vital Heat, what S. I A. 68	2	52
Concoction bad, equivalent to an empty Stomach, with Relation to Persp.	3	2
When bad, how known	3	12
How distinguished from Digestion	4	63
Currants, how they lessen Persp.	3	27
Cucumbers, how prejudicial	3	92
Consent of Parts, whence	4	40
Consumptions how occasion'd by violent Exercise	5	8
Cupping in a gross Body, why hurtful	5	22
Carriage in a Charriot, hurtful to the Reins	5	30
Coition immoderate, how it wasts the Spirits and weakens the Fibres	6	3
With one much loved why not hurtful	6	6
Cools the Body	6	8
especially the Stomach	6	10

	Se&t.	Aph.
<i>Most hurtful in Summer</i>	6	11
<i>Occasions Crudities</i>	6	15
<i>How it hurts the Eyes</i>	6	18
<i>Destroys the Vital Heat</i>	6	21
<i>Requires a slender nourishing Diet</i>	6	22
<i>Obstru&s Persp.</i>	6	37
<i>Coition, when beneficial</i>	6	4
<i>To know when hurtful</i>	6	9, 28
<i>The more desired tho' less hurtful</i>	6	13
<i>Without Ejection what its Consequences</i>	6	16
<i>Heats the Liver and Reins</i>	6	23
<i>Most hurtful to Lean People</i>	6	26
<i>Exercises the Mind</i>	6	27
<i>Best when the Stomach is empty</i>	6	33
<i>Good when natural, but bad when forced</i>	6	35
<i>Hurtful to Weak Persons</i>	6	36
<i>Best after Sleep</i>	6	41
<i>Not good after Exercise</i>	6	41
<i>Canine Motion, in Coition, bad</i>	6	39

D.

D ogs, <i>why they Perspire most by their Lungs</i>	1	5
Diseases, <i>their first Attacks best found by the</i>		
<i>Changes of Persp.</i>	1	42
<i>How removed</i>	1	81
Death, <i>how brought about</i>	1	81
Dropsies, <i>why the Humours do not then Perspire</i>	1	94
Digestives <i>Warm, best in Inflammatory Tumors</i>	1	97
Dieureticks, <i>of what use in Autumn</i>	2	46
Digestion, <i>how to be known</i>	3	19
<i>How distinguished from Conco&tion</i>	4	63
Diarrh&aa, <i>how it hinders Persp.</i>	3	22
<i>How it occasions Faintness</i>	3	93
Drink, <i>generally used to Excess</i>	3	68
<i>Between Meals hurtful</i>	3	97
Debauch,		

generis, vel Sphærici, vel ad Dimidiatam Sphæram aliquomodo accedentes.



	Sect.	Aph.
Debauch, of Wine over Night, why remedied by taking a plentiful Glass next Morning	3	78
About once a Month in some of Service	3	100
Dreams, why they hinder Persp.	4	4
Dancing, of what Service	5	33
Diseases, from Grief, why agree with those from Foggy Air	7	14
Disappointment in Vener. Inclinations, how bad	7	16

E.

E Vacuations Sensible, altogether not so much as Insensible Perspiration alone	I	4
The Diminution of one, the Encrease of another	I	5
An Encrease of altogether cannot be at the same Time	I	12
In a Viscid Blood without Stimuli, doe more hurt than good	I	26
How one Influences another	I	53
Encreased by Stool, Urine, or Phlebotomy where- in dangerous; by Persp. how serviceable	I	60
To be gradually made	I	114
By Violent Exercise how hurtful	5	8
Excrements, the Fluid heaviest	I	25
And lighten the Body most	I	26
Exercise, unusual Intermission, abates Persp.	I	57
When most Serviceable	I	74
Violent in a pleasant Air, how hurtful	2	16
When most Advantageous	5	7
What its good Consequences	5	9
Of two kinds, of the Body and of the Mind	5	14
Of the Mind, which most hurtful	5	16
Too much drys the Body	5	18
Violent, either of Body or Mind destructive	5	19
Why bad in gross Constitutions	5	20
X		How

	Sect.	Aph.
How to know when best	5	23
Too much, hardens the Fibres	5	35
Eating too much, nourisheth too little	3	54
Weakens the Stomach	3	55
After hard Exercise, not Safe	3	72
To know when most proper	3	77
Plentifully, how it procures Sleep after good Persp. and hinders it after bad	S. 4. A. 22,	23.
Plentifully, after Coition, destructive	6	32
Eatables what bad after Coition	6	25
Excess of Living, how injurious	3	74
Eyes, how hurt by immoderate Coition	6	18

F.

F asting, its bad Consequences	S. 3	A. 15, 16
How it proves Fatal	3	17
How to know when good, and when bad	3	32
Safest in the highest healthful Standard, but worst in the lowest	3	70
Its Consequences in Bilious Persons	4	21
Why it proves Injurious	3	86
Food Liquid, generally heaviest	1	27
Viscid, how it hinders Persp.	1	67
To know which nourishes and Perspires best	3	28
Too sparing, how destructive	3	40
In small quantity not felt in the Stomach	3	83
Drying, best in a Morning, in Phlegmatick Constitutions	3	88
Feeding plentifully, hurtful to Sedentary Pers.	3	29
After hard Exercise, not good	5	6
After Coition, destructive	6	32
Fulness too great, occasions bad Qualities	1	18
Not to be removed by Evacuation	1	19
Flesh Cold, after Sleep, a bad Sign	4	24
Flesh-Brush, when most of Service, and how	1	74
Fish,		

	Sect.	Aph.
Fish, <i>why not good at Supper</i>	3	91
Feavers intermitting, <i>whence</i>	1	95
Putred, <i>why in Autumn most</i>	1	115
Upon a Diminution of Perspiration, <i>best cured by</i>		
Evaccuation, <i>from Dr. Pitcairne</i>	2	10
<i>Why their first Attacks felt after Sleep</i>	4	24
<i>Why dangerous after Grief</i>	7	101
Fainting, <i>when serviceable in Feavers</i>	1	98
Frictions, <i>upon a full Habit, hurtful</i>	5	22
<i>Bad to Cholorick Persons</i>	7	33
Flatulences in the Hypoconders, <i>whence</i>	1	102
<i>In the Stomach, whence</i>	3	12
Flatus, <i>what</i>	3	13
Fomentations, <i>when hurtful</i>	1	103
Figgs, <i>how they lessen Perspiration</i>	3	27
Feet Pain, <i>when cur'd by Walking and when by Rest</i>	5	13
Fear, <i>hinders Perspiration</i>	7	1

G.

G Ripes, <i>how occasioned by Cold Air</i>	1	5
Gravity, <i>Absolute and Specifick</i>		
Gouty Humours, <i>discharged only by Persp.</i>	1	88
Gangrene, <i>what its Consequences</i>	S. 1	A. 106, 107
Garments Warm, <i>how of use in Autumn</i>	S. 2	A. 46, 47
<i>How assist Persp.</i>	2	59
Gravel, <i>how occasioned by Immoderate Coition</i>	6	24
Grief, <i>destroys Persp.</i>	7	1
<i>Continued, how it cools the Body</i>	7	9
<i>Going to Bed very Injurious</i>	7	15

H.

H Ealth, <i>its most certain Sign</i>	S. 1	A. 30, 62
<i>How to preserve it to a great Age</i>	2	54

	Sect.	Aph.
Head <i>in Pain, how it makes the Body heavier</i>	I	41
<i>Why affected by an Acrimony of the Juices</i>	4	10
<i>Light after Sleep, what a sign of</i>	4	43
Heat Vital and Natural, <i>what</i>	I	68
<i>As the Bloods Velocity in each Part</i>		ibid
<i>Destroyed by Immoderate Coition</i>	6	21
<i>In different Parts how different</i>	6	31
Heat of the Weather, <i>most uneasy to those who</i>		Per-
<i>spire ill</i>	I	78
<i>Its gradual Encrease least hurtful</i>	2	31
Hæmorrhage Periodical, <i>an Instance of it.</i>	I	60
Hypocondriacal Persons, <i>how to be treated</i>	I	102
<i>Whence their Pains and Wind</i>	3	12
<i>Why the better for Riding and Exercise</i>	3	12
Hypoconders <i>inflated, whence</i>	3	86
Honey, <i>how useful and how injurious</i>	3	161

I.

I	Nfections <i>how Communicated</i>	I	77
I	Itch <i>how Caught</i>		ibid:
J	uices <i>undigested, expelled by Violent Exercise</i>	5	2
I	naactivity of Mind, <i>hinders Persp.</i>	5	15
I	ncinations <i>after Venery, of what Effect</i>	6	7
I	njuries <i>from Coition, when most felt</i>	6	17
J	oy, <i>helps Persp.</i>	7	I
	<i>How raised by a plentiful Persp.</i>	7	23
	<i>Immoderate, how hurtful</i>	7	24
	<i>Moderate, how beneficial</i>	7	25
	<i>Sudden, why destructive</i>	7	26
	<i>Long continued, hurtful</i>	7	28

K.

K	idneys <i>how heat by Coition</i>	6	23
			Labour

L.

Sect. Aph.

L About hard, <i>how it hinders Persp.</i>	I	49
Loofness, <i>how it hinders Persp.</i>	I	54
Removed by Warm Baths	I	90
In Healthful Persons, <i>whence</i>	3	104
Limbs, <i>stretching, how it helps Persp.</i>	I	74
Lice, <i>how Produced</i>	I	76
Lungs, <i>what they Perspire in Proportion to that of the other Parts; as One to Ten</i>	I	82
Liquors Spirituous, <i>how hurtful</i>	2	15
New, <i>how they assist Persp.</i>	3	81
Litter Carriage, <i>not so good as Walking</i>	5	28
Leaping, <i>its Consequences</i>	5	31
Lean Persons, <i>most hurt by Coition</i>	6	26
Languor's, <i>how from Immoderate Coition</i>	6	29
Liver, <i>heat by Coition</i>	6	42

M.

M atter of Insensible Persp. <i>from whence Discharged</i>	I	15
Obstructed and not otherways Discharged <i>raises</i>		
Feavers	I	11
Such discharge, <i>not without Injury</i>	I	10
How it Putrefies	I	43
How it produces Schirri	I	45
How a Slight Feaver removes it, <i>and how it occasions a Malignant Feaver</i>	I	46
How Hot	2	37
Arising in Sleep, <i>differs from that when Awake</i>	4	16
Why the grossest discharges when Awake	4	45
How both Hot and Cold in Hypochondriacks	7	13
Medicines, <i>not safe in the beginning of Feavers</i>	I	47
When Improper	4	53
Injurious in the Plague	S. I	A. 139, 140
Midriff, <i>how it acts in Respiration</i>	I	124
		Manai cks,

	Sect.	Aph:
Manaicks, <i>their Fibres hardened</i>	2	13
<i>Why they bare large Evacuations</i>		ibid.
Meats, <i>most nourishing, Perspire least</i>	3	4
<i>è contrà</i>	3	5
<i>Keep the Body Heaviest</i>	3	6
<i>Accustomed Perspire best</i>	3	7
<i>Of what Qualities hinder Persp.</i>	3	18
<i>The more nourishing the worse if not digested</i>	2	21
<i>How to find the proper Quantities to be Eat at one Meal</i>	S. 3	A. 34, 38, 39, 41, 57
<i>Of Different Nourishment, leave Different Weights</i>	3	45
<i>Of least Nourishment hardest to be Concocted in the Stomach, but of the most Nourishment hardest to be Digested in the Arteries</i>	3	46
<i>Most Loosening</i>	3	47
<i>è contrà</i>	3	48
<i>That best Perspire, least apt to Corrupt</i>	3	60
<i>è contrà</i>	3	61
<i>Liquid most ponderous</i>	3	64
<i>That Perspire best, soonest Recruit after Venery</i>	1	80
<i>Of easy Persp. best for Weak Persons, and after Feavers</i>	4	16
<i>Of difficult Persp. how assisted</i>	3	82
<i>After violent Exercise why hurtful</i>	3	95
Meals, <i>ought to be kept to Regularly</i>	S. 1	A. 43, 44, 45, 46
<i>Too large, more hurtful then a greater Quantity at several Times</i>	S. 1	A. 37, 43, 85, 90
Mutton, <i>easily Perspires</i>	2	8
<i>In what Constitutions most Serviceable</i>	2	9
Mushrooms, <i>how hurtful</i>	S. 2	A. 23, 24
Melons, <i>hinder Persp. a fourth Part</i>	2	25
<i>How they go off by Urine</i>	2	26
Mind Disturbed, <i>how it hurts Digestion</i>	3	96
<i>Inactive, hinders Persp.</i>	5	15
		how

	Sect. Aph.
<i>How it may be said to Exercise or Rest</i>	ibid.
<i>Much Exercised by Coition</i>	6 27
<i>Melancholly, how removed</i>	7 17

N.

N atures being Employed, <i>what meant by it</i>	S. 1 A. 52, 53
<i>Strengthened, what</i>	I 68

O.

O ld Persons, <i>with bad Lungs to be treated only</i> <i>with Pectorals</i>	I 82
<i>Hurt by hard drinking, by luxurious eating, by</i> <i>Passion, by hard exercise, and by Venery</i>	I 84
<i>Why not reach a decrepid Age</i>	I 85
Old Men, <i>most hurt by Coition</i>	6 30
Old Age, <i>a Distemper</i>	I 83
Oil, <i>how useful upon Bathing</i>	I 122
Overcharge, <i>gradual, why by Degrees to be Evac.</i>	2 44
<i>And why best in Autumn</i>	2 45
Obstructions, <i>how occasioned by Greif</i>	7 37
<i>How they produce Evil Passions</i>	7 32

P.

P erspiration, <i>necessary to be understood by all that</i> <i>pretend to Physick</i>	S. 1 A. 1, 2, 3, 61. S. 3 A. 75
<i>Greater than all the sensible Evac.</i>	I 4
<i>To the other Evac. as 5 to 3</i>	I 6
<i>Different in different Persons</i>	I 7
<i>Of two Kinds and how they differ</i>	S. 1 A. 20, 75
<i>The more insensible the better</i>	S. 1 A. 20, 24
<i>Its wast Fifty Ounces in a natural Day</i>	I 2
	Why

	Sect.	Aph.
<i>Why it becomes visible and how injurious</i>	I	22
<i>Hindred, how it hurts the other Functions</i>	I	40
<i>Not all Times alike, when Most and when Least</i>	I	58
<i>Lightens the Body more than all the Evac.</i>	I	57
<i>Carrys off three Pound in one Night</i>	I	58
<i>Cæteris pacibus, as the Vitall Heat</i>	I	68
<i>Its total Obstruction Death</i>	I	86
<i>Obstructed in the Neck, how it hurts the Head</i>	I	119
<i>How much may be Obstructed without Injury</i>	2	11
<i>How of Service in Hot Seasons</i>	2	28
<i>Encreased, unless as a Remedy, Injurious</i>	2	33
<i>In Strong Persons, why most by Day in Summer but most by Night in Winter</i>	2	34
<i>Obstructed, why more dangerous in Summer, than in Winter</i>	2	35
<i>Its difference between a Good and a Bad Digestion</i>	3	1
<i>Why most plentiful in robust Persons</i>	3	14
<i>Why sooner disturbed in Sleep than when Awake</i>	4	14
<i>Greatest, eight Hours after Eating</i>	4	29
<i>Why Encreased by Sleep after long Watching</i>	4	54
<i>Not so much in Violent Exercise, as in Sleep</i>	5	1
<i>Obstructed, how it occasions Greif</i>	7	5
<i>How assisted by Joy</i>	S. 7	A. 6, 10
<i>How hindred by Greif</i>	7	8
<i>Precipice, by ascending, how to Judge of Health</i>	I	17
<i>Purges moderate, how they lighten the Body</i>	I	48
<i>Rough, how they make it heavier.</i>		Ibid.
<i>Pain, how it hinders Persp.</i>	I	49
<i>Periodical in the Head, an Instance</i>	I	66
<i>Puncture of a Nerve, how to be managed</i>	I	99
		Plague.

	Sect.	Aph.
Plague, <i>how propagated, & how stopped</i>	S. 1	A. 126, 127, 134
<i>From external Causes</i>	I	129
<i>Why worse to those who have Weak Lungs</i>	I	135
<i>Removed by Winds</i>	I	137
<i>Only to be fled from</i>	I	138
<i>Why it Continues</i>	I	140
<i>Not to be treated with Medicines</i>		ibid.
Proportion of the Evacuations in one Night,	4	Oun.
<i>by Stool, 15 by Urine, and 40 by Persp.</i>	I	59
<i>Of Food, most Healthful, how to find</i>	3	36
Persons, <i>lighter in Summer than Winter</i>	2	22
<i>And Weaker</i>	S. 2	A. 24, 25, 26
Pork, <i>how hurtful</i>	S. 3	A. 23, 24, 25
Passions of the Mind <i>Violent, waste more Spirits than</i>		
<i>Violent Exercise</i>	5	17
<i>To be considered as Physical Agents</i>		
<i>their Effects no otherways known</i>	7	I
<i>Contrary, remove the disorders of each other</i>	7	11
<i>Varied, how Beneficial</i>	S. 7	A. 20, 47
<i>Immoderate, how to be removed</i>	S. 7	A. 21, 22
<i>Immoderate, worse than Violent Exercise</i>	7	34
Palpitations, <i>why from immoderate Coition</i>	6	10
Posture standing, <i>in Coition, how bad</i>	6	40

Q.

Qualities bad, <i>from too great Fulness</i>	I	18
<i>Ill, in very minute Particles</i>	2	13
Quantity, <i>that ought to Perspire, how to know</i>	I	64
Quotidian Ague, <i>why most Dangerous</i>	I	118
Quiet in Bed, <i>more conduc. to Per. than Motion</i>	5	4

R.

Relative Weight of the Body, <i>what</i>	I	29
<i>Heat, what</i>	2	27
Robust Persons, <i>why they Perspire the grossest Mat.</i>	I	108
<i>ter</i>		

Y.

Re.

Sect. Aph.

Refrigeratives, in Accute Distempers Mortal	1	121
Rest in Bed, more conducive to Per. than Motion	5	4
Long continued, what its Consequences	5	12
Riding, in what Parts it most promotes Persp.	5	27

S.

S Standard of Weight always the same, a sign of Health	S. 1	A. 15, 16
Of Health, the greatest hastens Old Age	1	79
Of a great Latitude	1	81
Below Healthful worse than Above	S. 1	A. 31, 32
Specifick Gravity, what	1	26
Sleep, after Eating, why it makes People Fat	1	50
Uncovered, why Hurtful	2	36
How it promotes Persp.	S. 4	A. 20, 21
Perf. twice as much as when Awake	4	12, 18, 19
With Sweat Discharges no more than without it	4	3
Lightens the Body two ways	4	4
Interrupted, hinders Persp.	4	5
Perspires more than Exercise	S. 4	A. 6, 8, 30
Requires Digestion, in order to Persp.	4	7
Disturbed by the Acrimony of the Per. Matter	4	9
A want of it lessens Persp.	4	15
When most Useful	4	28
How of Service after Dinner	4	31
When most Advantageous	4	41
How it Moistens the Solids	4	44
How it abates Thirst	4	46
Too much how hurtful	4	50
Why worst to Cholerick Persons		ibid.
After Dinner why Hurtful	4	66
In what Posture best	4	68
Sweat an ill sign of Health	1	110
Of what Service in hot Seasons	S. 2	A. 28, 30
Is Persp. made Sensible	2	30
		Much

	Se&t.	Aph.
<i>Much after Drinking, a sign of great</i>		Strength
<i>or great Weakness</i>	3	66
<i>Cool after Sleep, a sign of the Gout</i>	4	69
<i>Always from some Violent Cause</i>	5	3
<i>How Injurious to the Complexion</i>	5	36
Strength, diminished two ways	S. 1	A. 33, 34
<i>In a Triplicate Proportion to the Quantities of</i>		
<i>Blood</i>	1	93
Spitting, <i>Serviceable to Old People and how</i>	1	82
Suffocations in Women, <i>whence</i>	1	87
Spots in the Skin, <i>whence</i>	1	105
<i>In the Plague, whence</i>	1	127
<i>Not from an Adu&tion of Humours</i>	1	131
Sphincter of the Bladder- <i>its Office</i>	1	125
Scales Hydro&tatical, <i>their Use</i>	2	5
Swimming in the Evening, <i>why best</i>	1	112
<i>After Violent Exercise, why Fatal</i>	2	14
<i>After Exercise, why bad</i>	5	24
Stimuli, <i>when hurtful</i>	2	16
Spring, <i>what Courses of Physick then best</i>	2	49
Standard of Health, <i>when best procured</i>	2	43
Standard of Weight, <i>its frequent Changes bad</i>	2	55, 56
Stomach, <i>how too full or too empty lessens Per.</i>	3	10
<i>Emptied by Fasting worse than by Physick</i>	3	87
<i>Cooled by immoderate Coition</i>	6	10
Stools Consistent, <i>a sign of good Persp.</i>	3	30
<i>Liquid, rob the Body of its Nourishment</i>	3	31
Standard lost by too slender Diet, <i>hard to be Rec.</i>	3	33
Sloth, <i>very injurious to Health</i>	3	105
Stretching, <i>how of Service, and whence</i>	S. 4	A. 33, 34, 36
Spirits Animal, Vital, and Natural, <i>what</i>	4	49
Stems from Persp. <i>how they Influence others</i>	4	58
Sight, <i>how hurt by Coition</i>	S. 6	A. 18, 19, 20
Study, <i>why hurtful without Variety</i>	7	44

The Contents of the Digressions.

	Page
DIGR. 1. <i>All Bodies Attract and are Attracted of one another.</i>	124
<i>To this Property is owing the intestine Motion of all Heterogeneous Fluids.</i>	ibid
<i>Its Exertion prevented by any Superior Force impressed ab extra; but where the external Force is weaker than this Property in some Parts, there arises then only a Partial Attraction; which is the Case of the Animal Fluids in their Circulations.</i>	125
<i>Three different Motions in the Blood, viz. Circular, Agitative and confused, or Fermentative.</i>	
<i>Why the most Nourishing Meats tend most to Corruption, or Putrefaction</i>	126
Digr. 2. <i>Whence Periodical Distempers in general, and what necessary for their Cure.</i>	178
<i>The general Cause of Agues, an encreased Viscidity of Blood.</i>	ibid.
<i>The Blood grows Viscid by an encrease of its Quantity, or by a Diminution of its Velocity, or both.</i>	ibid.
<i>How these bring it about</i>	179
<i>The Quantity of Blood may be encreased, and the Solids too Strait, which is the Case in Inflammatory continued Fevers</i>	180
<i>The difference between Intermittent and continued Fevers</i>	ibid.
<i>The particular Cause of an Ague, a relaxed State of the Solids, and a Viscid Blood together.</i>	ibid.
<i>How these are both brought about.</i>	181
<i>What is required in Order to their Cure</i>	182
<i>What brisk Motion does, and what Volatile and Piperine Medicines</i>	ibid.
<i>No Cure to be perfected without drawing up the Solids</i>	ibid.
<i>Why the Fit goes off, and returns at certain Periods</i>	183
<i>What the Bark does towards a Cure</i>	ibid.
<i>How Persons are Cured by Frights, Amulets and Charms</i>	184
<i>To draw up the Solids before the Lensor of the Juices is removed, why Dangerous</i>	ibid.
<i>The Lensor, is removed by Vomits and Volatile Medicines. And the Solids are drawn up by all Sub-Astringents and Exercise</i>	185
<i>How the Bark comes to be accounted a Specifick</i>	ibid.
<i>In what consists those Properties by which it Cures</i>	186
<i>How</i>	

How a Cure is brought about by the Bark	187
It Acts both as an Astringent and an Alterative	ibid.
The Blood the cheif Seat of its Efficacy	ibid.
Dr. Coles Hypotheses needless	ibid.
Why the Ague returns after a Cure by the Bark	ibid.
The Constitution of the Blood must be right before a Cure can be made, that will last	189
A Cure may Infallibly be made by Astringents, Bitters, Steel, Aromatics, and the like, although the Patient is falling into a Dropsie, Jaundice, or any other Distemper which follows a long Ague, if Used with Judgment.	190
Why Evacuation, soon after Cure returns it	ibid.
Why a long Ague hardest to Cure.	191
Digr. 3. The mutual dependence of the Solids and Fluids upon one another; the Spring of Motion in the former	212
The Difference between that Mechanism in the Muscles by which they obey the Dictates of the Mind; and that in the Heart and Arteries, by which they Vibrate involuntarily.	213
Necessary that the Solids should be continually kept moist, by some convenient Fluid.	214
What the peculiar Contexture of an Animal Fibre.	ibid.
Its Restitution or Contraction, from the same Cause as the Embolus of a Syringe.	215
The Fibres in a living Body always under a State of Distraction.	216
To preserve their Powers of Restitution, some Vacuola necessary between their Constituent Parts.	ibid.
The Requisites of the Fluid with which they are to be moistened.	217
How the Terms, Distraction, Vibration, Concussion, &c. of the Solids to be understood.	ibid.
How the Alternate Distractions and Contractions of the Heart and Arteries, are preserved; by which the Blood is kept in Motion.	218
The Consequences of such Motions, a continual Change, or they would last for ever.	219
How the Fluids are broke and wore away by it.	ibid.
The Matter of insensible Perspiration, cheifly from the nervous Fluid.	ibid.
How a continual Recruit necessary, and how supplied by a nearer way than from the Blood.	ibid.
The Nervous Fluid and Animal Spirits the same.	220

<i>What is not corporeal, and subject to mechanical Laws, does not belong to a Physicians Consideration.</i>	ibid.
<i>How a Gymnastick Practice is supported by this Theory.</i>	221
<i>How the Nervous Fluid is disordered, and how remedied.</i>	222
<i>Health consists in an Equilibrium between the Force of the Solids, and the Resistance of the Fluids</i>	223
<i>The most Natural Practice depends upon knowing how that Equilibrium is lost, and how to restore it</i>	ibid.
<i>The Effects of Musick upon the Solids</i>	ibid.
<i>Why rough Exercise Injurious</i>	224
<i>How Exercise encreases Strength</i>	ibid.
<i>The Consequences of sudden Repletion, or Evacuation</i>	
<i>Digr. 4. An Inflammatory Feaver described</i>	272
<i>A Nervous Feaver described</i>	273
<i>How the former Changes into the latter</i>	274
<i>Wherein they differ</i>	ibid.
<i>Why Evacuations bring on, and are Fatal in all Nervous Feavers</i>	275
<i>To keep the Body Laxative, why dangerous</i>	276
<i>The Causes of a Nervous Feaver, and its Periods</i>	277
<i>How to be Managed</i>	ibid.
<i>Stupidity and Convulsions, whence</i>	278
<i>The Morbid Matter, not to be discharged by any Evacuation</i>	ib.
<i>Why Deafness a good Symptom</i>	279
<i>Blisters how Serviceable in Nervous Feavers</i>	ibid.

ADVERTISEMENT.

THOSE Persons who have any Librarys or small Parcels of Old Books to Dispose of, either in Town or Countrey, may have Ready Money for them of Will Newton, Bookseller in Little-Britain, London. Also all Gentlemen, and Schoolmasters, may be Furnished with all Sorts of Classicks, in Usum Delphi. Variorum's, &c. Likewise, he will Exchange with any Person, for any Books they have read and done with.



